Child Maltreatment: Where are we now?

by

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Child Maltreatment History in the United States

Child maltreatment was first recognized by the United States government in 1974 with the passage of the Child Abuse Prevention and Treatment Act (CAPTA) (Child Welfare Information Gateway, About CAPTA: A Legislative History, 2019). Even though the United States government did not formally recognize child maltreatment until 1974, it was an issue long before the late twentieth century. An entire century before the passage of CAPTA, the United States saw its first prosecuted case of child maltreatment. Ten-year-old Mary Ellen MacCormack was continually beaten by her adoptive mother Mary Connolly. Mary Ellen's neighbors noticed her physical appearance and made reports to New York's Department of Public Charities and Corrections. An investigator, Etta Angell Wheeler, was assigned to investigate the report and quickly realized something needed to be done for Mary Ellen. Wheeler was not sure of what legal action could be taken due to the absence of formal child maltreatment laws, so she decided to approach the American Society for the Prevention of Cruelty to Animals. The ASPCA's founder Henry Bergh learned of Mary Ellen's case and retained a well-known lawyer, Elbridge Gerry, who brought the case before the New York State Supreme Court. After the Court heard Mary Ellen's testimony regarding the abuse, Justice Abraham R. Lawrence found Mary Connolly guilty of multiple counts of assault and battery (Markel, 2009).

Because of Mary Ellen's case, in December 1874 Henry Bergh and Elbridge Gerry helped establish the New York Society for the Prevention of Cruelty to Children (Markel, 2009). The organization is thought to be the world's first child protective services agency. After Mary Ellen's case, nonprofit organizations were formed for the purpose of preventing further cases of abuse like Mary Ellen's. Within six years of Judge Lawrence's ruling, the United States had thirty-seven organizations dedicated to protecting children. That number continued to rise as

time passed. By 1922, there were more than 300 nonprofit organizations committed to the protection of the nation's children (National Child Abuse and Neglect Training and Publications Project, 2014).

Despite Mary Ellen's case and the rise in nonprofit organizations, the United States government did not truly begin to become concerned with child maltreatment on a national scale until 1962 (Markel, 2009) when Henry Kempe and Brandt F. Steele, both pediatricians, published "The Battered-Child Syndrome": an article detailing the effects of recurrent physical abuse on children (Kempe et. al., 1985). It should be noted that the federal Children's Bureau was founded in 1912, but this agency was tasked with overseeing all aspects of child welfare including child labor, orphanages, child health, foster care, and child abuse (History, n.d.). The variety of issues that the Children's Bureau had to oversee left the issue of child abuse still largely untouched (National Child Abuse and Neglect Training and Publications Project, 2014). Kempe and Steele defined battered-child syndrome as "a clinical condition in young children who have received serious physical abuse, generally from a parent or foster parent" (Kempe et. al., 1985). Kempe and Steele did not just give a clinical definition of the term--they also included how it appeared as "'unrecognized trauma' [to] radiologists, orthopedists, pediatricians, and social service workers" (Kempe et. al. 1985). Kempe and Steele were sure to point out that the people responsible for seeing the signs of the abuse were not recognizing said signs.

In addition to detailing the clinical signs of abuse, Kempe and Steele gave important insight regarding the occurrence of abuse that some people today still do not want to accept: people of all socioeconomic status perpetrate abuse, not just people in poverty (Kempe et. al., 1985). Even though the nation had been aware of the issue of child maltreatment since Mary Ellen's case in 1874, it was not until Kempe and Steele's article that the country as a whole felt

something needed to be done concerning child maltreatment. Within five years, each state and the District of Columbia had created and passed a piece of legislation regarding reporting incidences of maltreatment (National Child Abuse and Neglect Training and Publications Project, 2014). While every state now had some sort of law regarding child maltreatment reporting, there was still an issue for enforcement of the law and protection of the children. States did not generally have the resources needed to properly investigate each case that was reported (National Child Abuse and Neglect Training and Publications Project, 2014).

The Children's Bureau was formed at the recommendation of the White House Conference on Children and Youth during their 1909 meeting--sixty-one years later, this conference used its meeting to examine child maltreatment. Out of this 1970 meeting came "the establishment of state councils designed to monitor the status of children in the state" (National Child Abuse and Neglect Training and Publications Project, 2014). This solution contributed towards resolving the need for larger resources within each state for investigating the reported cases of child maltreatment. The Senate Committee on Labor and Public Welfare knew something more needed to be done at the federal level, so they decided to form a Subcommittee on Children and Youth. This new Subcommittee was chaired by Sen. Walter Mondale, a man who later ran unsuccessfully for president in 1984. Sen. Mondale began holding hearings to learn more about the issue of child maltreatment in the United States and quickly introduced and sponsored the Child Abuse Prevention and Treatment Act (National Child Abuse and Neglect Training and Publications Project, 2014). Sen. Mondale's bill was co-sponsored by thirteen other senators from both major political parties (Child Abuse Prevention and Treatment Act, 1974). Representative John Brademas from Indiana led the efforts for the bill in the House, and after receiving the overwhelming majority of votes in both the House and the Senate, "the Child

Abuse Prevention and Treatment Act of 1974 was now on its way to becoming the law of the land" (National Child Abuse and Neglect Training and Publications Project, 2014). Despite initial hesitancy from the White House, President Richard Nixon signed CAPTA into law on January 31, 1974 (National Child Abuse and Neglect Training and Publications Project, 2014).

With the passage of CAPTA came the difficult part: actually implementing it. States were still working on drafting and passing legislation to establish and develop their respective child protective agencies, which is a process that takes time. The federal government still needed to fully grasp the extent of child maltreatment in the United States and decide how they were going to attempt to fix it. The first step towards understanding the current state of child maltreatment was the creation of the National Center on Child Abuse and Neglect (NCCAN) which was designated to be a part of the Children's Bureau (National Child Abuse and Neglect Training and Publications Project, 2014).

The NCCAN started its work with conducting the National Child Abuse and Neglect Reporting Study (NCANRS). Data regarding child maltreatment was lacking, and the NCANRS was designed to fill that gap. NCCAN gathered data for NCANRS from reports of child maltreatment made to state child protective agencies. Given the nature of how the data was collected, it was by no means completely reflective of the current state of child maltreatment. States were not required to submit data, and states' definitions of child abuse and neglect varied in the degree of what acts were considered criminal, resulting in underreporting and bias in estimates of the actual incidence and types of child maltreatment. Given the limitations of the NCANRS, the NCCAN decided to initiate a more valid and reliable national study which became the first National Incidence Study (NIS-1) (National Child Abuse and Neglect Training and Publications Project, 2014).

The NCCAN also focused on developing reporting laws in each state. Given the short period of time since the passage of CAPTA, many states still did not have the necessary reporting laws to adequately protect their children. NCCAN also assisted states in providing proper training on child abuse and neglect within the child protective services agencies and other professional groups such as educators and law enforcement. In 1979, NCCAN published one of its most well-known resources: *The Child Abuse and Neglect User Manual Series* (National Child Abuse and Neglect Training and Publications Project, 2014).

CAPTA was reauthorized by the federal government in 1978, four years after its initial signing. At this point in time, the original sponsor of the bill in 1974, Walter Mondale, was serving as Vice President of the United States under President Jimmy Carter, but there was no issue with reauthorizing CAPTA despite Mondale's absence in the Senate. This reauthorization required every state to create and fund a child protective service agency. It also set guidelines for NCCAN regarding research, education materials, and interagency collaboration. One important part of the CAPTA Reform Act of 1978 was the official defining of the term "sexual abuse". With the official defining of sexual abuse came a shift in focus towards treating victims of child sexual abuse and educating professionals on the signs of child sexual abuse. This shift in focus also led towards examining the area of child sexual exploitation material (National Child Abuse and Neglect Training and Publications Project, 2014). Child sexual exploitation material is commonly referred to as child pornography, but it is important to distinguish this from adult pornography, which implies consent from both parties involved (Page, 2019).

President Ronald Reagan was elected in 1980 with the intention of limiting the federal government's involvement in family affairs. With this goal of reducing government involvement, President Reagan hoped to repeal CAPTA. This most certainly caused alarm within the child

maltreatment community, but Senators from both parties did not have the same goal as President Reagan and were able to find a way around needing his approval for a reauthorization. When it came time to reauthorize CAPTA in 1981, the Senate passed a budget that included funding for the provisions set forth within CAPTA, including the NCCAN, without having to separately reauthorize CAPTA. Despite this work around from legislators, CAPTA still lost 30% of its original funding in 1982, two years after President Reagan was elected. Despite this decrease in funding, the NCCAN was still able to continue its vital work to further develop state child protective agencies and educate professionals on child maltreatment (National Child Abuse and Neglect Training and Publications Project, 2014).

The first National Incidence Study came to fruition after two years of planning and testing. NIS-1 was conducted from 1979-1980 and its results were published in 1981. The NIS-1 gave government officials and child maltreatment professionals a more accurate representation of the number of child maltreatment victims in the United States by using reports to CPS agencies and surveys of child maltreatment professionals across the country. NIS-1 also gave the federal and state governments complete definitions of the varying types of child maltreatment which had not previously been done.

Despite President Reagan's disdain for governmental involvement in family affairs, his administration did recognize the rate at which child maltreatment was rising in the United States and in 1983 declared the entire month of April "National Child Abuse Prevention Month". This is a month that is still recognized today. It is important to note that the previous year Senate and House of Representative members requested President Reagan recognize the week of June 6-12, 1982 as "National Child Abuse Prevention Week", so it took President Reagan almost an entire

year to issue a Presidential proclamation regarding child abuse prevention awareness (National Child Abuse and Neglect Training and Publications Project, 2014).

The government made no changes to CAPTA from 1978-1984. The changes that took place in 1984 were prompted largely by media coverage of disabled newborns being neglected by hospital staff. Multiple cases of babies being inadequately treated for severe medical conditions due to the babies' assumed poor quality of life was deemed by professionals, including the Surgeon General, to be neglect. These cases led to the passage of the Child Abuse Amendments of 1984. Included in these amendments was an extension of the definition of neglect to include "the withholding of fluids, food, and medically indicated treatment from disabled children" (National Child Abuse and Neglect Training and Publications Project, 2014, pg. 30). The amendments also required state agencies to develop reporting requirements for medical neglect in order to receive federal funding for child protective services (National Child Abuse and Neglect Training and Publications Project, 2014).

With the changes in support for child maltreatment prevention at the federal level came changes in support at the state level too. States began to develop Children's Trust Funds which were designated to support child maltreatment prevention efforts. Kansas was the first state to create such a trust fund and did so in the spring of 1980. By the end of the decade, 47 states had created Children's Trust Funds (National Child Abuse and Neglect Training and Publications Project, 2014). When first created, the funds distributed approximately $23 million nationwide annually and now contribute approximately $100 million annually (National Alliance of Children's Trust & Prevention Funds, 2018).

In 1986, Congress passed more amendments to CAPTA (without reauthorization) which became known as The Children's Justice and Assistance Act of 1986. This set of amendments

focused on the process in which child maltreatment cases--especially child sexual abuse cases--are handled by both case workers and law enforcement. Some of the existing investigative methods at the time were deemed to be potentially too traumatizing for the child victims. This legislative discussion was initiated by the experiences of Senator Paula Hawkins, who had been raped at the age of five by a trusted adult. Senator Hawkins felt that the way she was treated as a five year old victim was not appropriate for that age and wanted to ensure other young victims did not have the same experience post-assault that she did (National Child Abuse and Neglect Training and Publications Project, 2014).

The second National Incidence Study (NIS-2) was conducted from 1986-1987, and its results were published in 1988. NIS-2 utilized two sets of standards for child maltreatment: the "Harm" standard and the "Endangerment" standard. The "Harm" standard identified children as being maltreated "only if they had already experienced harm from abuse or neglect" (National Child Abuse and Neglect Training and Publications Project, 2014, pg. 37) whereas the "Endangerment" standard identified children as being maltreated if they "experienced abuse or neglect that put them at risk of harm" (National Child Abuse and Neglect Training and Publications Project, 2014, pg. 37). Utilizing both standards allowed for a more accurate representation of the number of child maltreatment victims in the United States at the time (National Child Abuse and Neglect Training and Publications Project, 2014).

CAPTA underwent more revision in 1988 as the Child Abuse, Prevention, Adoption, and Family Services Act of 1988. This legislation facilitated the creation of a system for national data collection, a federal interagency task force on child abuse and neglect, and a national advisory board on child abuse and neglect. The new system for data collection included data on reports of and deaths from child maltreatment. This national data collection system became known as the

National Child Abuse and Neglect Data System (NCANDS) and led to the establishment of the National Data Archive on Child Abuse and Neglect (NDACAN), which still provides child maltreatment data today, including the data used in this thesis. The national advisory board was created out of the 1988 amendments, and in 1990, the board issued its first publication: *Child Abuse and Neglect: Critical First Steps in Response to a National Emergency*. This report noted the extreme rise in child maltreatment rates but the decline in support for prevention and research efforts going so far as to declare child maltreatment a "national emergency" (National Child Abuse and Neglect Training and Publications Project, 2014, pg. 46).

In 1991, a restructuring of federal agencies occurred, including the removal of NCCAN from the Children's Bureau and making the NCCAN a bureau of its own under the newly formed Administration on Children, Youth, and Families. NCCAN was then split into two divisions: the Program Policy and Planning Division and the Clearinghouse Division. The Program Policy and Planning Division oversaw most of the NCCAN grants as well as child protective services agency issues. The Clearinghouse Division oversaw data, publications, a small section of grants, and training (National Child Abuse and Neglect Training and Publications Project, 2014). During this period of change for NCCAN, they began to research new areas of interest in child maltreatment including the "psychological impact of child maltreatment" (National Child Abuse and Neglect Training and Publications Project, 2014, pg. 50).

CAPTA was again reauthorized in 1992 as the Child Abuse, Domestic Violence, Adoption and Family Services Act of 1992. This reauthorization did not drastically change the law, but it did broaden grant opportunities and research focuses. Also in 1992, NCCAN published its first report using data from the NCANDS. This report led to a yearly report that is still issued today (National Child Abuse and Neglect Training and Publications Project, 2014).

The national advisory board created in the 1988 reauthorization of CAPTA was required by the 1992 reauthorization of CAPTA to research and develop a report regarding child maltreatment fatalities in the United States. This report, *A Nation's Shame: Fatal Child Abuse and Neglect in the United States*, published in 1995 was the most read report out of all the reports the advisory board issued over the years and created a model for child fatality review teams that is utilized across the globe (National Child Abuse and Neglect Training and Publications Project, 2014).

The government conducted the third National Incidence Study (NIS-3) from 1993-1994 and published the results in 1996. NIS-3 confirmed the advisory board's conclusion that child maltreatment rates were rising significantly. NIS-3 also reported that there has been an increase in illicit drug use amongst child maltreatment offenders alongside the increase in child maltreatment rates overall. NIS-3 also found that the number of children receiving child protective services investigations was one-fourth of the number of children who were abused as determined by NIS-3, suggesting that the agencies were not investigating all reported cases (National Child Abuse and Neglect Training and Publications Project, 2014).

CAPTA was due for reauthorization in 1995 but due to a desire for welfare reform from the Republican party, CAPTA was not able to be reauthorized until 1996, after the welfare reform legislation had been passed. The 1996 reauthorization was the Child Abuse Prevention and Treatment Amendments of 1996. This reauthorization established a new base definition of child abuse "to include death, serious physical or emotional injury, sexual abuse, or imminent risk of harm" (National Child Abuse and Neglect Training and Publications Project, 2014, pg. 60). The 1996 amendments also did away with the NCCAN as a bureau of the Administration for Children, Youth, and Families. The new agency structure created an Office on Child Abuse and

Neglect (OCAN) within the Children's Bureau that would perform the same functions and duties as NCCAN (National Child Abuse and Neglect Training and Publications Project, 2014). In an effort to bolster the criminal justice system's response to child maltreatment, the Child Abuse Prevention and Enforcement Act was signed in March 2000. This law authorized funds to support law enforcement agencies in investigating reports of child maltreatment and participating in prevention efforts (National Child Abuse and Neglect Training and Publications Project, 2014).

CAPTA underwent another reauthorization in 2003 as the Keeping Children and Families Safe Act. It was originally up for reauthorization in 2001, but after the events of September 11, 2001, CAPTA was put on hold until 2003. This reauthorization included further training requirements for child protective services professionals and a fourth National Incidence Study. NIS-4 was conducted in 2005-2006 and results were published in 2010. NIS-4 found an overall decrease in the rate of child maltreatment from NIS-3 (National Child Abuse and Neglect Training and Publications Project, 2014).

In 2003, the federal government launched the National Child Abuse Prevention Month Initiative in recognition of the 20th anniversary of President Reagan proclaiming April National Child Abuse Prevention Month. Included in this initiative was the release of *Emerging Practices in the Prevention of Child Abuse and Neglect*. This report analyzed existing prevention efforts and gave recommendations on which ones professionals should be utilizing. It was an important contribution to prevention efforts because it gave the message that while major strides had been made in the area of child maltreatment prevention, there was still much to be learned (National Child Abuse and Neglect Training and Publications Project, 2014).

In 2010, the federal government passed the CAPTA Reauthorization Act of 2010. This piece of legislation recognized the common co-occurrence of domestic violence and child maltreatment as well as substance abuse and child maltreatment. It also allowed for Native American tribes to be eligible for certain federal grants for child maltreatment efforts (National Child Abuse and Neglect Training and Publications Project, 2014).

CAPTA has since been amended by the Justice for Victims of Trafficking Act of 2015 and the Comprehensive Addiction and Recovery Act of 2016 and was most recently reauthorized by the Victims of Child Abuse Act Reauthorization Act of 2018. These recent updates include new provisions for child victims of trafficking, infants born with illegal substance dependencies, and criminal and civil protections for child maltreatment reporters (Child Welfare Information Gateway, About CAPTA: A legislative history, 2019).

Child Maltreatment Definitions

Child maltreatment is not a term that has a standard definition like we might find in a dictionary. Rather, child maltreatment encompasses multiple types of abuse and neglect and has different legal categorizations in different states. Each state's definition of child maltreatment has a common foundation from the baseline federal definition: "at a minimum, any recent act or failure to act on the part of a parent or caretaker which results in death, serious physical or emotional harm, sexual abuse or exploitation; or an act or failure to act which presents an imminent risk of serious harm" (Turner & Rogers, 2012). There are currently six types of child maltreatment that states might recognize through legislation: physical abuse, neglect, sexual abuse/exploitation, emotional abuse, parental substance use, and abandonment (Child Welfare Information Gateway, Definitions of child abuse and neglect, 2019). Physical abuse, neglect,

sexual abuse/exploitation, and emotional abuse are the four most recognized types of child maltreatment on a national level. Parental substance use and abandonment are being recognized more by states as child maltreatment, but there are still some states that do not have codified laws to prosecute for parental substance use and abandonment (Turner & Rogers, 2012).

Child Physical Abuse

The Centers for Disease Control defines physical abuse as "the intentional use of physical force against a child that results in, or has the potential to result in, physical injury" (Alexander, 2017, pg. 5). While physical abuse is a frequent form of child maltreatment, deaths related to physical abuse are rare (Alexander, 2017). When examining perpetrators of physical abuse, it has been found that 60% of physical abusers are male (Alexander, 2017). Research has also shown that child physical abuse often occurs alongside intimate partner violence (Alexander, 2017). This is especially important when considering men are more likely to physically abuse, as men are also more likely to commit intimate partner violence (NCADV: National Coalition Against Domestic Violence, n.d.). Some studies indicate a 30-60% overlap of intimate partner violence and child physical abuse cases (Preventing Child Physical Abuse, n.d.).

Substance abuse amongst perpetrators of child physical abuse is common. This can lead to a lack of restraint when punishing a child and subsequently increase the likelihood of physical abuse to take place. The involvement of substance abuse can also be problematic when the parent/caregiver has their own history of childhood abuse. When an adult that was victimized as a child misuses substances, that adult can sometimes revert to their victimization and abuse the child around them like the adult was abused as a child (Alexander, 2017).

Child victims of physical abuse often experience "increased withdrawal, apathy, low self-esteem, conduct disorder, and aggressiveness" (Turner & Rogers, 2012). Certain consequences

of physical abuse can be life-long for victims including “anxious arousal, depression, anger and irritability, intrusive experiences, defensive avoidance, dissociation, sexual concerns, dysfunctional sexual behavior, impaired self-reference, and tension reduction behavior” (Turner & Rogers, 2012). The U.S. Department of Justice has found that victims of physical abuse were more likely to commit and be arrested for a violent crime when compared to victims of other forms of maltreatment (Preventing Child Physical Abuse, n.d.).

It is important to note that there is not one specific cause of child physical abuse. Physical abuse often stems from stressors in the perpetrator’s life, and the stressor(s) that can lead to physical abuse can vastly differ from person to person (Preventing Child Physical Abuse, n.d.). Some examples of the stressors includes “a child with a disability, a parent struggling with depression or substance abuse, intimate partner violence, a father who is not involved in their child’s life, a lack of community supports (e.g., affordable childcare), the burdens associated with poverty, and inadequate policies to support families and parents” (Preventing Child Physical Abuse, n.d.).

Child Neglect

The Centers for Disease Control defines neglect as “the failure to provide for a child’s basic physical, emotional, or educational needs to protect a child from harm or potential harm” (Alexander, 2017, pg. 6). According to Prevent Child Abuse America, neglect is the most common type of child maltreatment in the United States (Preventing Child Neglect, n.d.). Neglect can be difficult to characterize in individual instances as it depends on the circumstances of the parents or person(s) responsible for the child--especially financial circumstances. It is important to delineate the difference between parents that want to provide for their children and cannot versus the parents that have the means to provide for their children but fail to do so.

Despite the difficulty inherent in identifying what constitutes neglect, it is the most common type of maltreatment reported to child protective agencies (Alexander, 2017).

The effects of neglect on a child will vary with the degree of neglect that occurred. Despite the variance in potential effects of neglect on a child, neglect can have extreme short- and long-term effects on the child's mental development as well as their emotional development. When child victims of neglect are compared to child victims of physical abuse, the children that experienced neglect "have more severe cognitive and academic deficits, social withdrawal and problematic peer interactions, and internalizing (as opposed to externalizing) problems" (Alexander, 2017, pg. 162). Children that experienced neglect at the hands of their parents are also more likely to develop substance abuse issues (Alexander, 2017). The full extent of how neglect affects the victims as children and adults is not yet known as there has not been extensive research conducted regarding child maltreatment victims that have only suffered from neglect--many of the victims that have been studied have often suffered from one or more other types of maltreatment (Turner & Rogers, 2012).

Child Sexual Abuse

The Centers for Disease Control defines child sexual abuse as "any completed or attempted (noncompleted) sexual act, sexual contact with, or exploitation, ie, noncontact sexual interaction, of a child by a caregiver" (Alexander, 2017, pg. 5). Thirty-three states have composed their definition of child sexual abuse to include "human trafficking, including sex trafficking or trafficking of children for sexual purposes" (Child Welfare Information Gateway, Definitions of child abuse and neglect, 2019).

Child sexual abuse certainly encompasses a large amount of different and unique situations of abuse a child could be subjected to experiencing. Benjamin Saunders stated this

notion well: “Today, child sexual abuse … may indicate a wide range of sexual victimization experiences encountered by children and adolescents, such as being the subject of pornographic pictures distributed on the Internet, sexual assault by a peer or dating partner, children being made to observe adults engaging in sexual activity or watch pornography, drug- or alcohol-facilitated rape, exploitation through prostitution, or a long list of other sexually related victimization experiences” (Turner & Rogers, 2012). Each one of these experiences Saunders mentions carries its own unique trauma and subsequent consequences. Victims of child sexual abuse tend to suffer more from depression, anxiety, poor concentration, sexually transmitted diseases, substance abuse, unsafe sexual behaviors, self-injury, and relationship distress. Child sexual abuse victims in the United States make up more than half of all people currently in therapy/counseling (Alexander, 2017).

It is important to consider the situation surrounding incidences of child sexual abuse. While some children are victimized within their own home, many children are victimized outside the home. Non-family offenders often come from a position of power and trust like a teacher, pastor, or coach. Parents/caregivers are taught to be able to trust people like teachers, pastors, and coaches, but we must be cognizant of the risk of sexual abuse outside of the parent’s care (Alexander, 2017).

Child Emotional Abuse

The Centers for Disease Control defines emotional abuse/psychological maltreatment to be “intentional caregiver behavior, i.e., act of commission, that conveys to a child that he/she is worthless, flawed, unloved, unwanted, endangered, or valued only in meeting another’s needs” (Alexander, 2017, pg. 5). It is important to note that emotional abuse can occur over a long period of time or can occur in isolated incidences (Alexander, 2017).

The American Professional Society on Abuse of Children published a set of guidelines on emotional abuse that includes six types of emotional abuse:

1. Spurning: “verbal and nonverbal caregiver acts that reject and degrade a child” (Alexander, 2017, pg. 336)
2. Exploiting/Corrupting: “caregiver acts that encourage the child to develop inappropriate behaviors (e.g., self-destructive, antisocial, criminal, deviant, or other maladaptive behaviors)” (Alexander, 2017, pg. 337)
3. Terrorizing: “caregiver behavior that threatens or is likely to physically hurt, kill, abandon, or place the child or child’s loved ones/objects in recognizably dangerous situations” (Alexander, 2017, pg. 337)
4. Denying Emotional Responsiveness: “caregiver acts that ignore the child’s attempts and needs to interact (e.g., failing to express affection, caring, and love for the child) and showing no emotion in interactions with the child” (Alexander, 2017, pg. 337)
5. Isolating: “caregiver acts that consistently deny the child opportunities to meet needs for interacting/communicating with peers or adults inside or outside the home” (Alexander, 2017, pg. 337)
6. Mental Health, Medical, and Educational Neglect: “unwarranted caregiver acts that ignore, refuse to allow, or fail to provide the necessary treatment for the mental health, medical, and educational problems or needs for the child” (Alexander, 2017, pg. 337)

Victims of child emotional abuse may experience anxiety, depression, substance abuse, eating disorders, impulse control issues, aggression, low empathy, lower measured intelligence, respiratory problems, and deviant adrenocortical responding and amygdala activity (Alexander, 2017). It should be noted that the previous list of symptoms is not all encompassing as to what

victims of child emotional abuse may experience. Research has also shown that victims of child emotional abuse may be more likely to suffer from psychological, emotional, and behavioral impairments than victims of child physical abuse (Child Emotional Abuse, n.d.).

When examining reported cases of child maltreatment to child protective service agencies, emotional abuse represents a low number of maltreatment reports made, but professionals believe emotional abuse to be highly underreported. It is important to recognize emotional abuse early as it can be detrimental to a child even at a low level (Alexander, 2017).

North Carolina Child Maltreatment Statutes

North Carolina codifies its child maltreatment statutes in Chapter 7B, Subchapter 1: Abuse, Neglect, Dependency. North Carolina uses two terms for child victims: "Abused Juvenile" and "Neglected Juvenile". The category "Abused Juvenile" includes an extensive list of twenty-nine different types of abuse and references the North Carolina General Statute that outlines the criminal charge for that type of abuse. "Neglected Juvenile" includes eight different types of neglect on the part of the "parent, guardian, custodian, or caretaker" (North Carolina General Assembly, n.d.)). Human trafficking of a minor is included in both definitions.

North Carolina requires "any person or institution who has cause to suspect that any juvenile is abused, neglected, or dependent, … or has died as the result of maltreatment, shall report the case of that juvenile" (North Carolina General Assembly, n.d.) making North Carolina a mandatory-reporting state. Failure to report known child maltreatment in North Carolina can result in the person's charge and conviction of a Class 1 misdemeanor (North Carolina General Assembly, n.d.). The state also requires reports of abuse to be assessed by the county's child protective agency within twenty-four hours and reports of neglect or dependency to be assessed

within seventy-two hours of when the report was made. If there is evidence found to support the claim made by the reporter, the child protective agency must notify law enforcement and the district attorney's office within forty-eight hours. Dependent upon the type of maltreatment, the child protective agency may also have to simultaneously seek temporary custody of the child(ren). Both criminal and civil actions can be made in a case of child maltreatment in North Carolina--criminal actions are made by the district attorney's office and civil actions are made by the legal counsel for the child protective agency (North Carolina General Assembly, n.d.).

Data Collection

As indicated in my original Thesis Prospectus, I intended to use two datasets from the National Data Archive on Child Abuse and Neglect: one for 1990-1999 and one for 2017. I went through the process of ordering these datasets and received them about three days later. The 2017 dataset was an easy-to-read Microsoft Excel spreadsheet, but the 1990-1999 dataset was not anywhere near ready to read. In an effort to try and view the file, I uploaded the 1990-1999 set into R Studio. The dataset imported without any data labels--the labels were contained in a separate file and there were over one hundred of them. Since the set did not have data labels, I decided to open it with Microsoft Excel and attempt to add data labels for easier analysis.

Importing the set into Microsoft Excel resulted in all of the data for one state being contained within one text box. I used the text to column feature to attempt to separate out the numbers. This worked for about 75% of the data. The first three data categories were year, state code, and total child population of the corresponding state, and none of these values for each row separated out. I decided to clean up the data so that there were three separate columns with year, state name (rather than a state code), and total child population. After spending the time cleaning

up these three variables, I started to input the data labels. After inputting all of the data labels for the 1990-1999 set, I discovered that there were substantially more data labels than values in each row. I had no way to discern which values correspond to which labels, so I decided to not use the 1990-1999 set and choose a different set.

When looking at the set I wanted to use as a replacement, I discovered that I would need to go through a more extensive process to obtain the set as it was deemed a 'restricted file' and would take 2-3 weeks for delivery. Since I was operating within a restricted timeline, I began looking online for other sources of the data I needed. I ultimately found the archive of Child Maltreatment Reports published by the Children's Bureau of the U.S. Department of Health & Human Services. These reports contained the data I needed to perform the analysis I had originally outlined in my Thesis Prospectus. I chose to use the 1999 (U.S. Department of Health & Human Services, Administration on Children, Youth and Families, 2001) and 2017 (U.S. Department of Health & Human Services, Administration on Children, Youth and Families, 2019) reports to be consistent with the years I was originally planning to analyze.

I did have to take the data from within the reports and put them into Excel sheets myself, but this allowed me to have one dataset for each year with all of the data I wished to analyze. The data contained within the reports is considered public domain, so I did not have to obtain permission from the federal government to use the data contained within the reports. The child population data for 2017 was not contained within the 2017 report, so I obtained the 2017 total child population by state from the national Kids Count Data Center. Kids Count obtained their numbers from the United States Census Bureau (Annie E. Casey Foundation, n.d.). I made an attempt to locate the data directly from the Census Bureau's website but could not find it.

Anticipated Findings

The third National Incidence Study of Child Abuse and Neglect (NIS-3) was conducted from 1993-1994, and the fourth National Incidence Study of Child Abuse and Neglect (NIS-4) was conducted from 2005-2006 (National Child Abuse and Neglect Training and Publications Project, 2014). NIS-4 found an overall decrease in the rate of child maltreatment in the United States when compared to the data collected in NIS-3 (Sedlak et. al., Fourth National Incidence Study of Child Abuse and Neglect (NIS-4): Report to Congress, Executive Summary, 2010). When solely analyzing via the "Harm" standard, NIS-4 saw a 19% decrease in the total number of child maltreatment victims when compared to NIS-3. When only examining the "Endangerment" standard, there wasn't any statistically significant change in the rate of child maltreatment between NIS-3 and NIS-4. It should be noted that when using the "Endangerment" standard, there was a significant increase in the rate of emotional neglect as the type of maltreatment (Sedlak et. al., Fourth National Incidence Study of Child Abuse and Neglect (NIS-4): Report to Congress, Executive Summary, 2010). Given the decrease with the "Harm" standard and the absence of significant change with the "Endangerment" standard, I expect to see a slight decrease in child maltreatment rates but not necessarily in every analysis category.

Child maltreatment prevention efforts have drastically increased since they first started at a national level with the passage of CAPTA in 1974. The most common prevention programs today across the United States utilize parent education and home visits. Parent education usually involves attending group sessions led by a professional with a focus on positive parenting behaviors. Home visits usually include at least one visit from a caseworker--most often a child protective services employee. The CPS worker may develop a parenting plan with the parent(s). While these programs certainly have the potential to be effective, they do not always target the

cause of the problem. Parent education programs can provide positive parenting feedback, but if an underlying factor for the maltreatment is poverty, then a parenting class will not solve that issue. A 2015 national study of home visit programs found that less than half of the study participants "had ever discussed with their home visitor other services that might help their family" (Maguire et. al., 2019, pg. 3581). This indicates a need for improvement in the areas of child maltreatment prevention. Issues in the effectiveness of prevention programs lead me to anticipate to not find a drastic decrease in the child maltreatment rates from 1999 to 2017.

Data Analysis

I chose to display the 51 states and district included in the plots by their corresponding economic region. This facilitates additional analysis to look for trends by economic region. Finances, especially within a family, can often be a trigger for child maltreatment, so I wanted to visually examine whether or not certain trends existed with certain economic regions.

Figure 1:

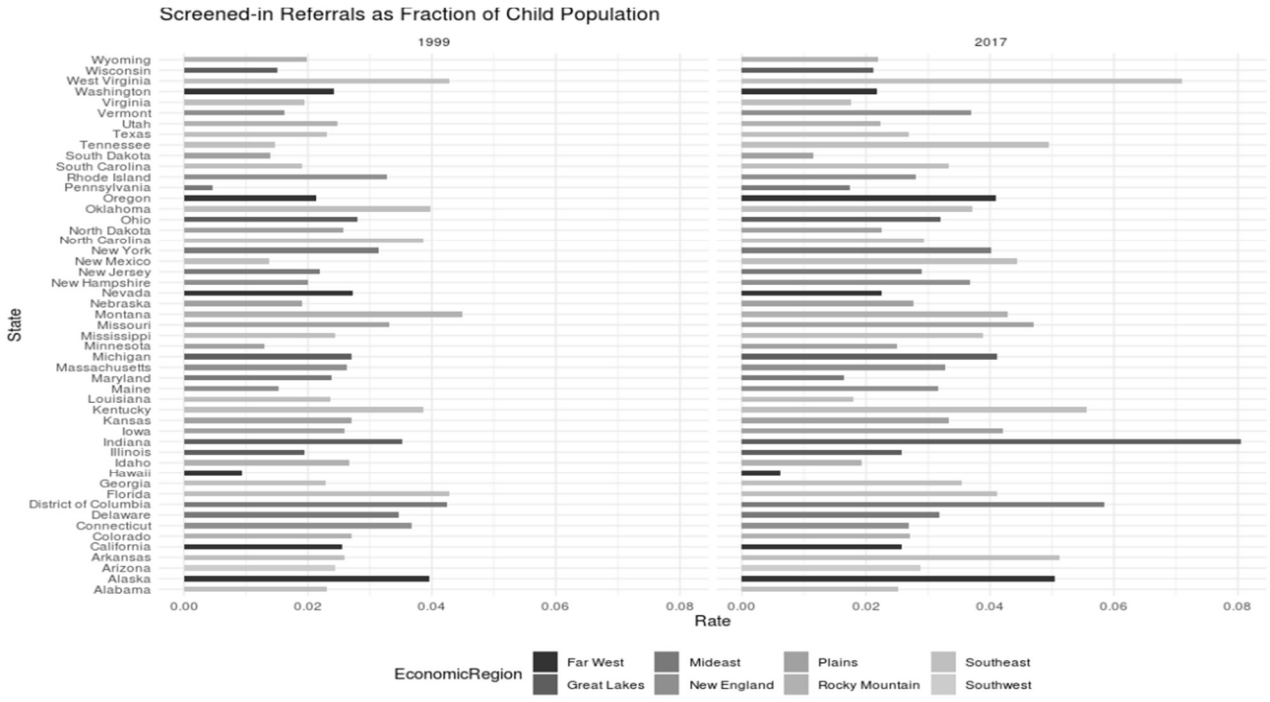


Figure 1 displays the rate of screened-in referrals of child maltreatment by each state's child protective services agency as a fraction of each state's child population in 1999 and 2017. It also displays the Economic Region for each state. The overall mean percent change is 39% while the overall median percent change is 25%. Both the mean and median reflect increases in the rate of screened-in referrals from 1999 to 2017. There were 36 states that saw an increase from 1999 to 2017 and there were 15 states that saw a decrease. For the 36 states that saw an increase in the rate of screened-in referrals from 1999 to 2017, the mean increase from 1999 to 2017 was 67% and the median increase from 1999 to 2017 was 45%. Ten states saw an increase in the rate of screened-in referrals greater than 75% with the largest three increases measuring 276%, 235%, and 222% belonging to Pennsylvania, Tennessee, and New Mexico, respectively. For the ten states that saw an increase in the rate of screened-in referrals greater than 75%, the distribution by Economic Region is as follows: 3 in New England; 2 in the Southeast; 1 in the Southwest; 1 in the Plains; 1 in the Mideast; 1 in Great Lakes; and 1 in the Far West.

Figure 2:

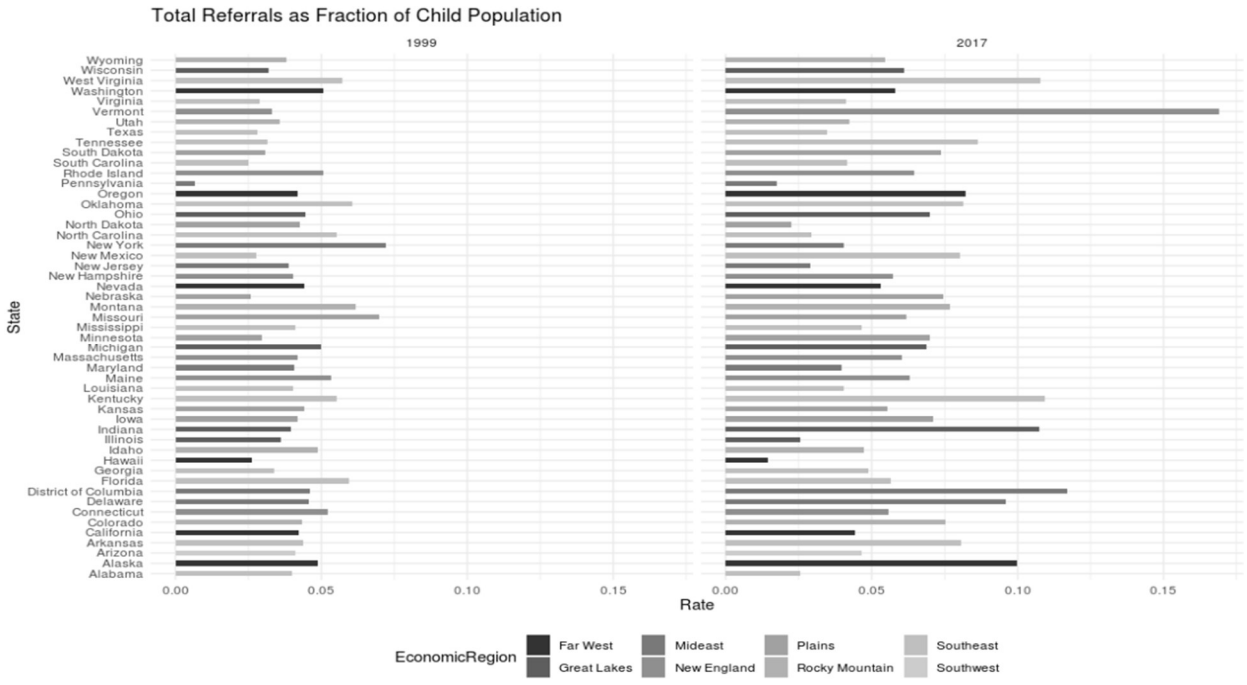


Figure 2 displays the rate of total referrals of child maltreatment made to each state's child protective services agency as a fraction of each state's child population in 1999 and 2017. Figure 2 also displays the Economic Region for each state. The overall mean percent change is 56%, and the overall median percent change is 38%. Both the mean and the median reflect increases in the rate of total referrals from 1999 to 2017. 42 states saw an increase in the rate of total referrals from 1999 to 2017, and 9 states saw a decrease in the rate of total referrals from 1999 to 2017. For the 42 states that saw an increase, the mean increase from 1999 to 2017 was 79% and the median increase was 50%. 16 states saw an increase in the rate of total referrals from 1999 to 2017 greater than 75% with the largest three increase measuring 411%, 191%, and 189% belonging to Vermont, New Mexico, and Nebraska, respectively. For the sixteen states that saw an increase in the rate of screened-in referrals greater than 75%, the distribution by Economic Region is as follows: 2 in the Far West, 4 in the Southeast, 3 in the Mideast, 2 in the Great Lakes, 3 in the Plains, 1 in the Southwest, and 1 in New England.

Figure 3:

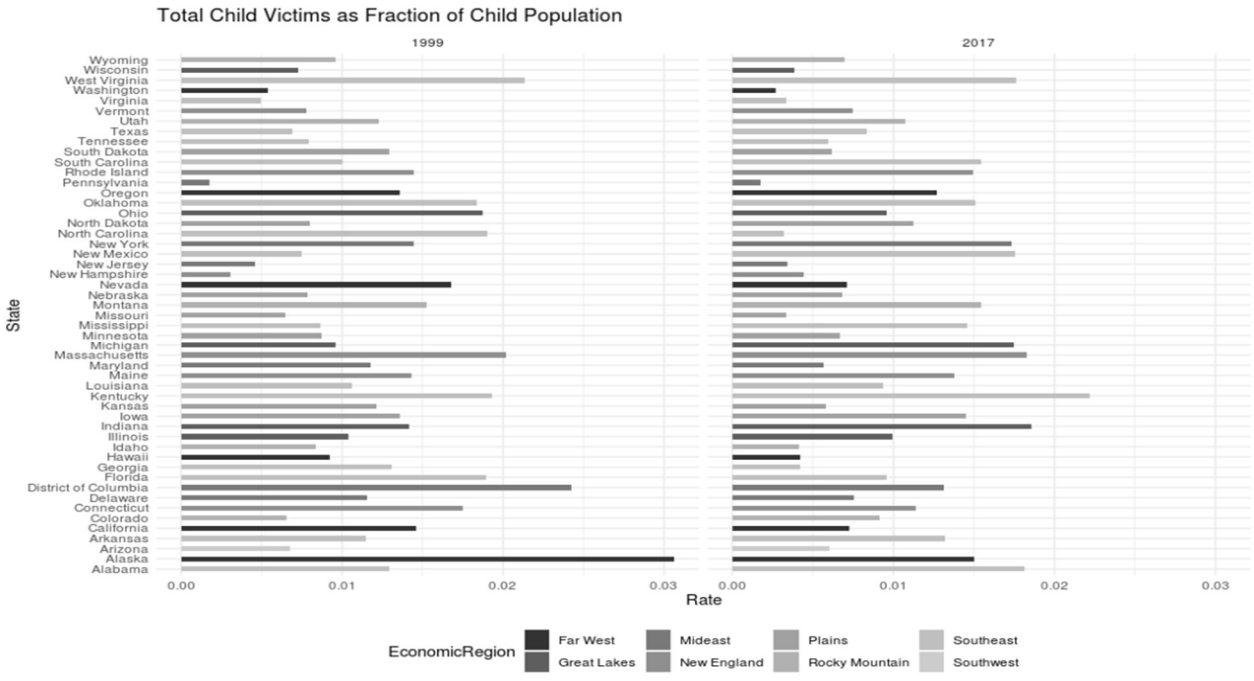


Figure 3 displays the rate of total child victims as a fraction of each state's child population in 1999 and 2017. Figure 3 also displays the Economic Region for each state. The overall mean percent change is -11% and the overall median percent change is -13%. Both the mean and median reflect decreases in the rate of total victims from 1999 to 2017. 35 states saw a decrease and 16 states saw an increase. For the 35 states that saw a decrease, the mean decrease from 1999 to 2017 was -34% and the median decrease from 1999 to 2017 was -35%. 11 states saw a decrease in the rate of total victims greater than 50% with the largest three measuring -83%, -68%, and -57% belonging to North Carolina, Georgia, and Nevada, respectively. For the 11 states that saw a decrease in the rate of total child victims greater than 50%, the distribution by Economic Region is as follows: 5 in the Far West, 2 in the Southeast, 2 in the Plains, 1 in the Mideast, and 1 in the Rocky Mountains.

Figure 4:

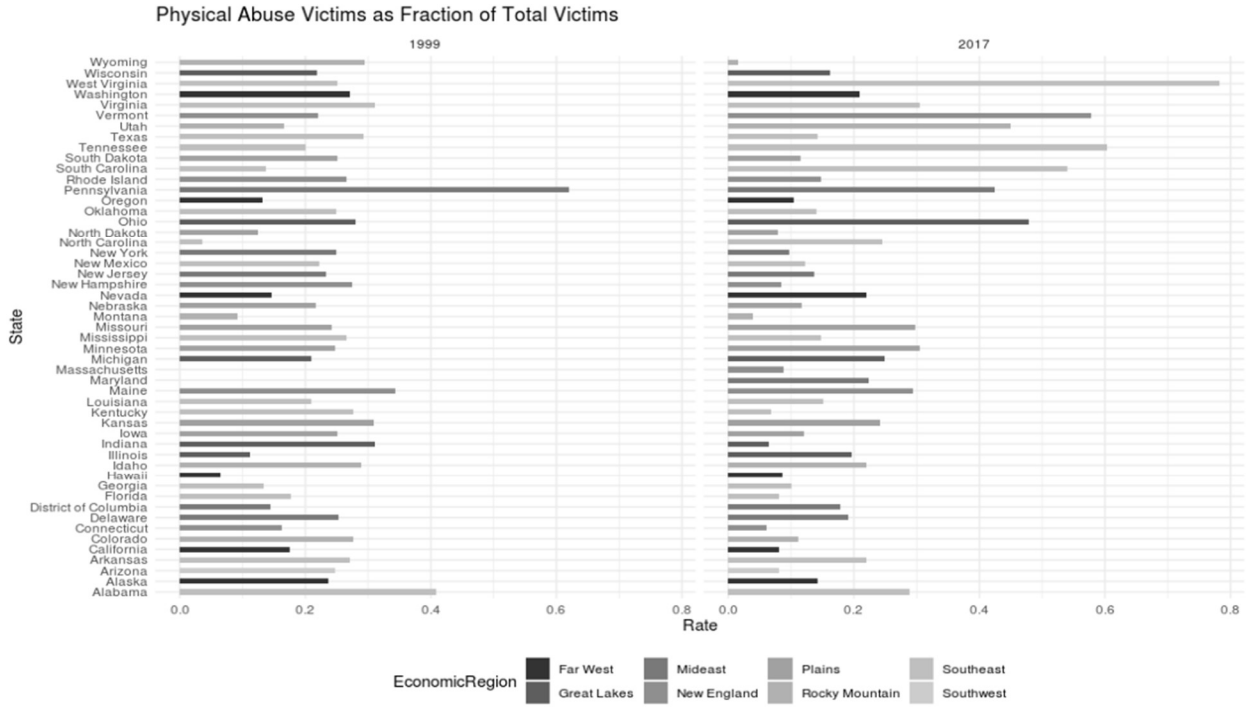


Figure 5:

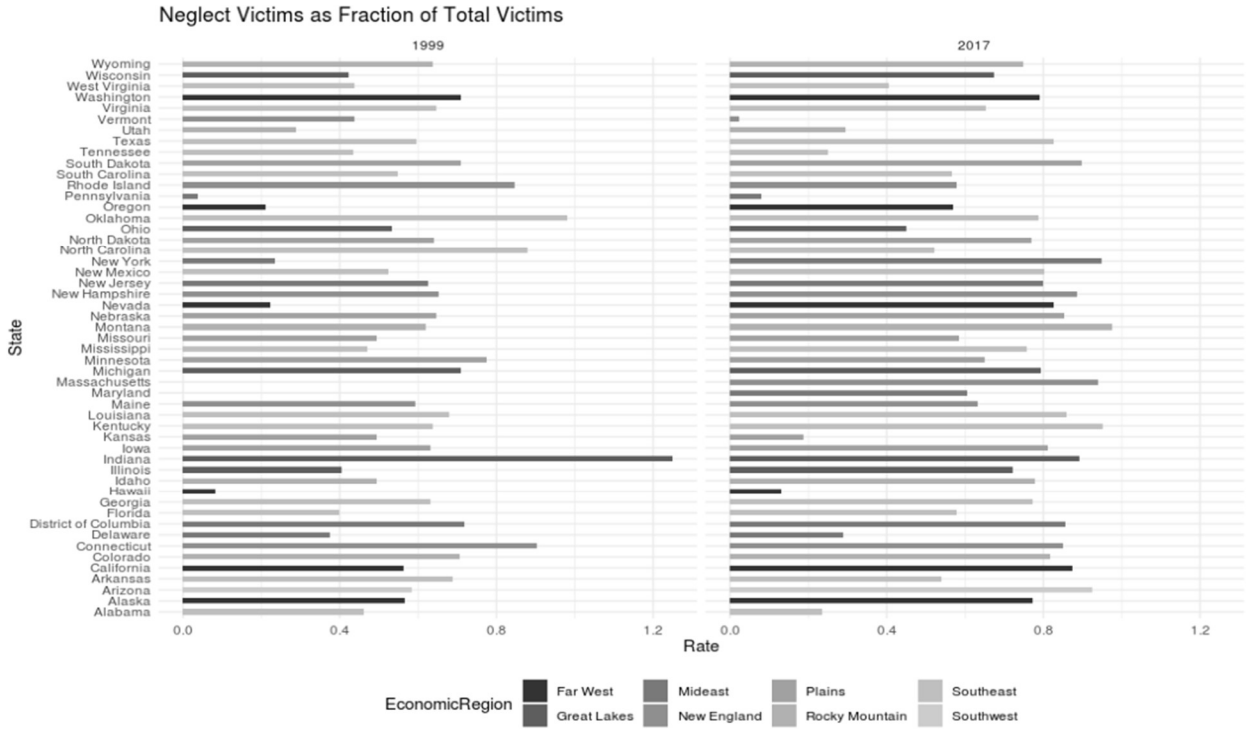


Figure 6:

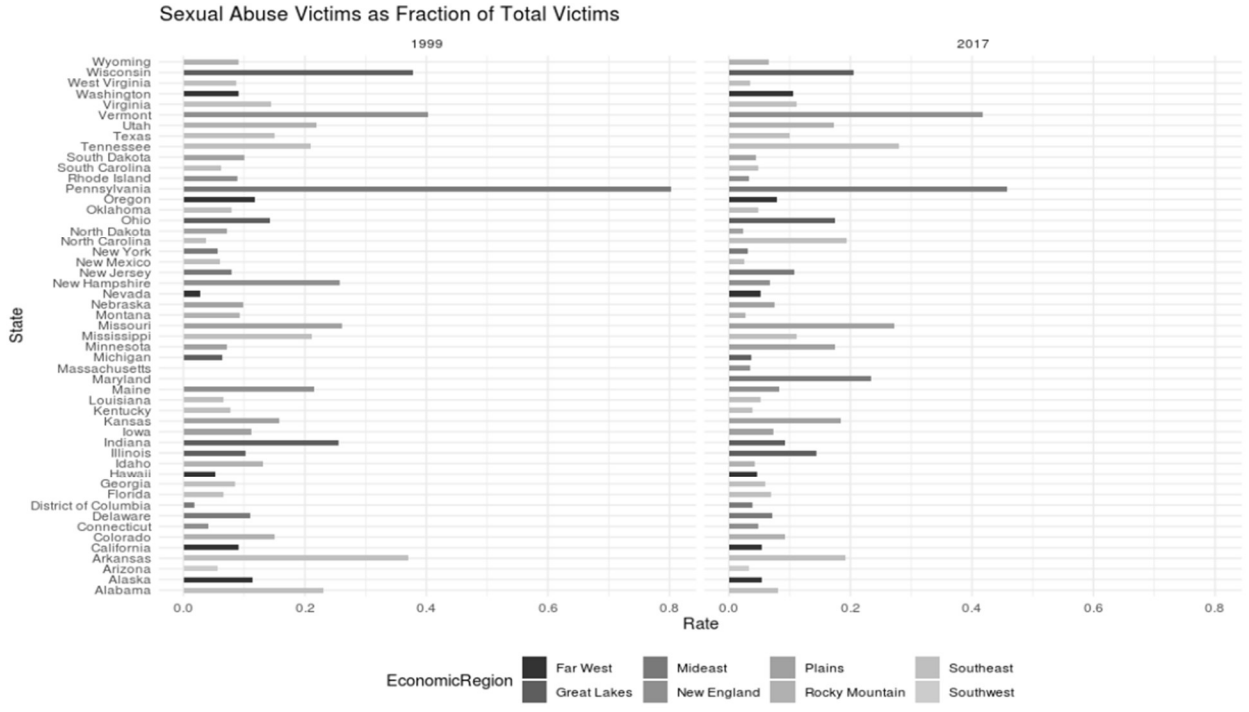
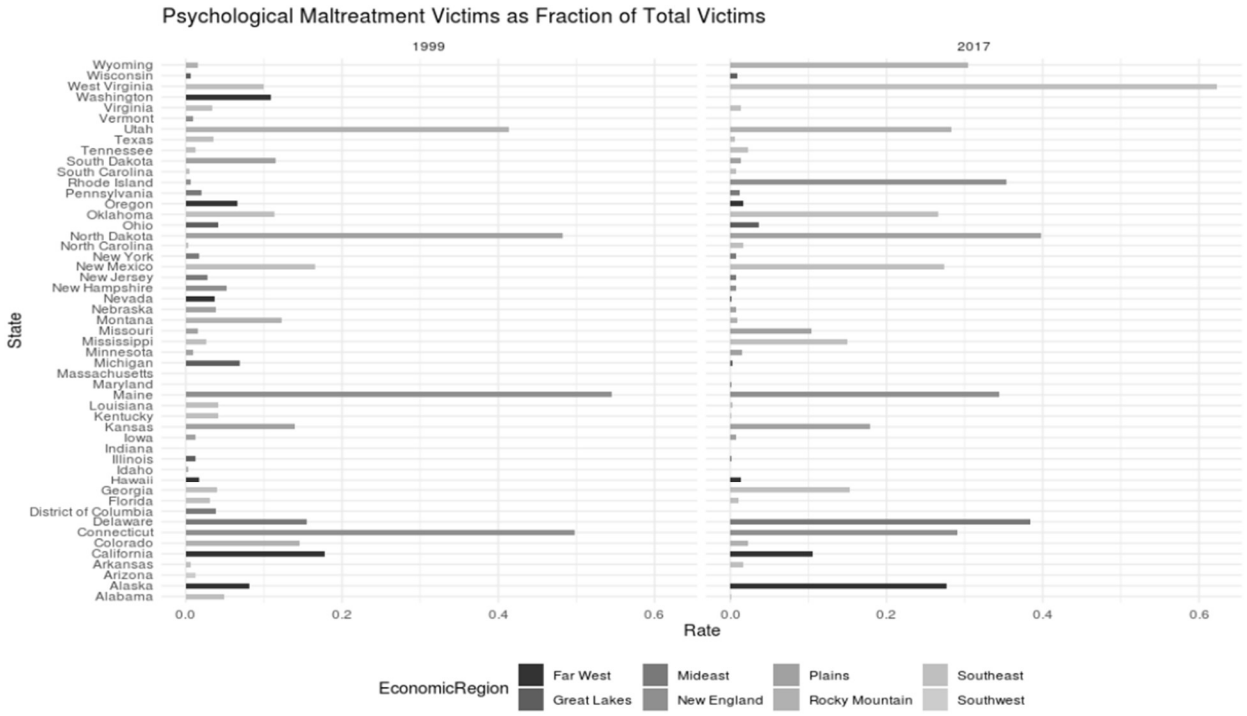


Figure 7:



Figures 4-7 show the incidences of the four main types of child maltreatment as fractions of the total child victims for each state. According to Alexander (2017), neglect is the most common type of child maltreatment, and when looking at Figure 5 compared to Figures 4, 6, and 7, neglect appears to overall be the most frequent type of child maltreatment.

Some states like Indiana have higher rates than would be possible if every one incidence represented only one child victim. Since these higher rates like Indiana with a ~1.2 are present, we can conclude that some of the children included in the total child victims numbers were victimized more than once or were victims of more than one type of maltreatment.

There are a few states that did not report their numbers for any types of maltreatment in 1999 as it was not required then. Some states did not have a number to report for psychological maltreatment (Figure 7) in 2017 as they stopped recording the numbers for that type of maltreatment and/or do not refer those cases to law enforcement.

Figure 8:

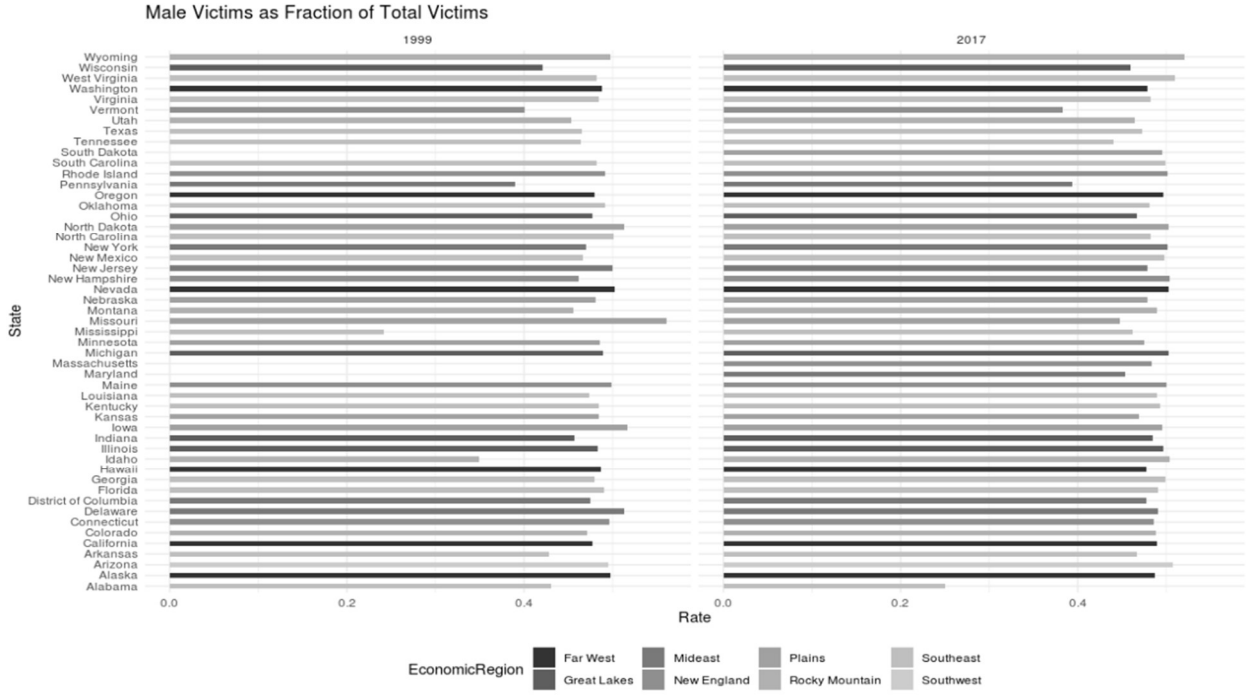
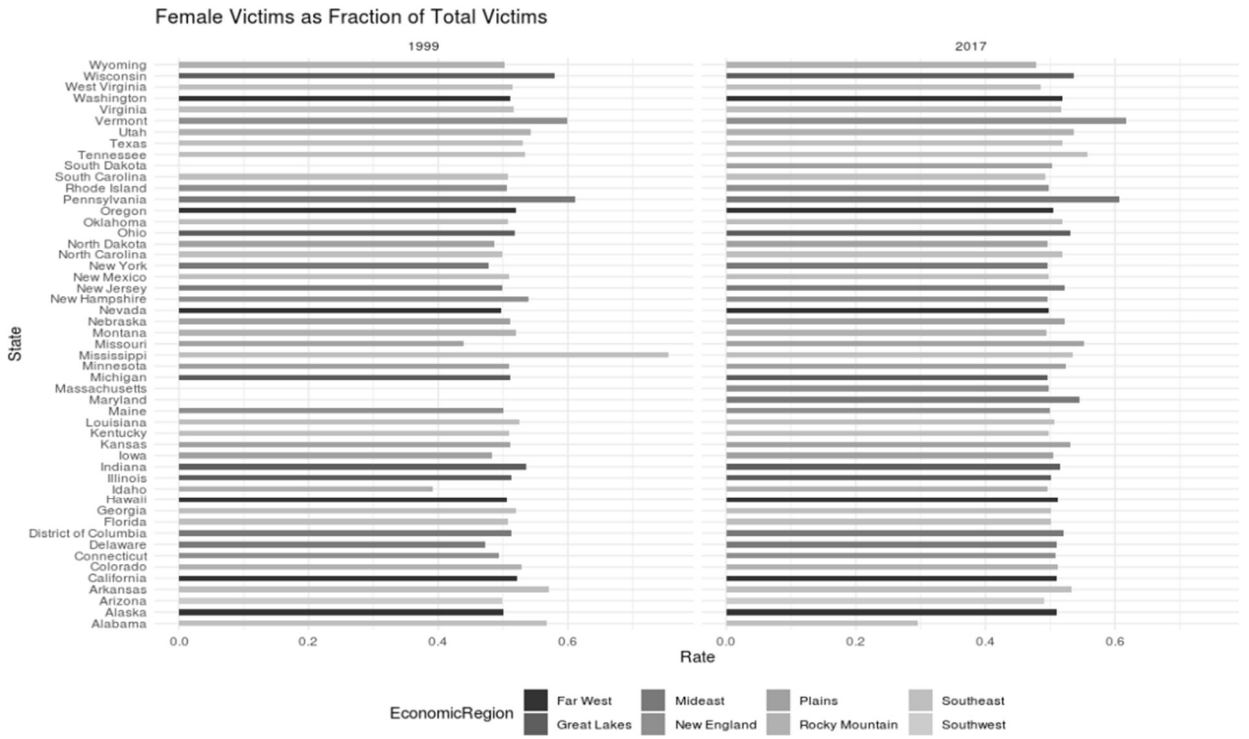


Figure 9:



Figures 8 and 9 show total child victims by sex. Maryland, Massachusetts, and South Dakota did not report the sex of victims in 1999. Comparing Figures 8 and 9, there is not a vast difference in victim sex from 1999 to 2017 for both males and females. It can also be seen the one sex is not vastly more victimized over the other. For male victim rates displayed in Figure 8, the mean and median for 1999 are 47% and 48% respectively while the mean and median for 2017 are 48% and 49% respectively. For female victim rates displayed in Figure 9, the mean and median for 1999 are 52% and 51% respectively while the mean and median for 2017 are 51% and 51% respectively. The mean and median for both sexes and years confirms the visual observations.

Figure 10:

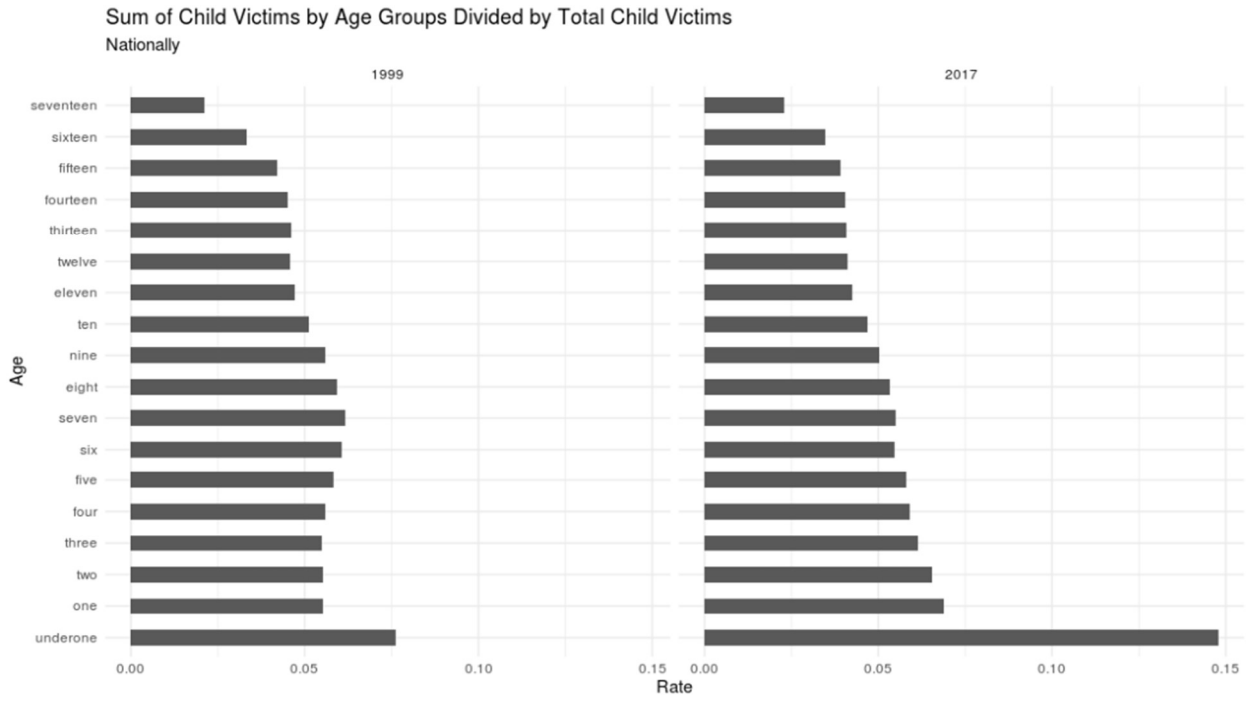


Figure 10 displays the victimization rate by age for the United States as a whole. Given the eighteen different age brackets and the fifty-one states and district with supplied data, I chose to analyze the ages nationally to ensure clarity in the plot. The distribution of age amongst

victims did not vary much from 1999 to 2017 except for the "underone" category. The rate of victims under the age of one rose from 8% in 1999 to 14% in 2017. This is the only age category that saw an increase or decrease greater than 1%.

Discussion

Data Trends

Based on the performed data analysis for 1999 and 2017, there were increases in the rate of total child maltreatment reports made to child protective services agencies and screened-in referrals of child maltreatment reports while there was also a decrease in the rate of total child victims. This increase in the rate of overall referrals and screened-in referrals most likely reflects the increase in child maltreatment education and prevention efforts from 1999 to 2017. It can also be caused by reports of previous incidences of child maltreatment being reported multiple years later. This would increase the rate of referrals but not the rate of total victims.

Child neglect was the most common type of child maltreatment for both 1999 and 2017. This is consistent with the findings in (Alexander, 2017). The fact that neglect is the most common form of child maltreatment is understandable due to the all-encompassing nature of how we define neglect. The least common type of child maltreatment for both 1999 and 2017 was psychological maltreatment. Psychological maltreatment is usually an extremely underreported form of maltreatment, so it follows that psychological maltreatment would appear to be the least common type of maltreatment (Alexander, 2017). When each state's maltreatment rate by type is added up, some of the totals would be over 100%. This is most likely attributed to victims being victimized on more than one occasion and victims being maltreated in more than one category.

The performed analysis did not show much disparity in the sex of the children being maltreated. It was an almost even split between male and female children. There is a very small number of child victims where the sex was unknown, which is what leaves the states' percentages to not add up to an even 100%. If I had been able to analyze the sex by maltreatment type, there would most likely have been a disparity in the sex by type of maltreatment, i.e., females are highly more likely to be sexually abused than males.

Analysis of child victim ages nationally showed consistency amongst the ages from 1999 to 2017 except for victims under the age of one. The "underone" category drastically increased from 1999 to 2017. This is consistent with the findings of NIS-4 that the 0 to 2 group saw an increase of 28% from NIS-3 when using the "Endangerment" standard (Sedlak et. al., Fourth National Incidence Study of Child Abuse and Neglect (NIS-4): Report to Congress, 2010, 4-18).

In regards to potential trends within economic regions, I did not notice any significant differences in economic region for Figures 1-3. I think it is worth noting that out of the eleven states with the greatest decrease in Figure 3, 5 of those states were from the Far West region. However, it mandates further research be conducted to ascertain whether this is substantively significant or merely coincidental.

Recommendations

The data used in my research and the other data available regarding child maltreatment in every state/district is reported using data from each state/district's respective child protective services (CPS) agency. Because of the data being collected and reported by CPS agencies, the data is often not as robust as a data analyst would prefer. If I had been able to choose how to collect the data, I would have broken down the victim sex and race by maltreatment type. This would allow to see trends within each maltreatment type which would give further insight into

victimization. Many child maltreatment statistics are based on each type of child maltreatment, but since the data reported by the child protective service agencies did not include this breakdown, I could not attempt to verify these well-known statistics with my data analysis.

Thirty-three states have updated their legal definition of child sexual abuse to include human sex trafficking (Child Welfare Information Gateway, Definitions of child abuse and neglect, 2019). I would recommend that every state include human sex trafficking in their defintion of child sexual abuse. Law enforcement agencies have the ability to conduct sting operations to facilitate the prosecution of sex traffickers, but when the statutes do not reflect the current state of the sex trafficking "industry", prosecutors cannot fully do their job to convict the sex traffickers.

Sources Notes

It is important to note that "The Child Abuse Prevention and Treatment Act: 40 Years of Safeguarding America's Children" (2014) is used extensively as a source in the "Child Maltreatment History in the United States" section of this thesis. This report published by the U.S. Department of Health and Human Services, Children's Bureau details the history of child maltreatment policy in the United States from its inception to the forty-year anniversary of the passage of CAPTA in 2014. The authors of the report compiled a list of forty-three sources to create an all-encompassing report of the development of CAPTA and its subsequent reauthorizations. Because of the authors' compilation of sources, I felt it was appropriate to use this source for the majority of the information contained in the "Child Maltreatment History in the United States" section.

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Appendix A: R Code

```{r setup, include=FALSE}
knitr::opts_chunk$set(echo = TRUE)
library(dplyr)
library(tidyverse)
library(ggplot2)
```

PREPARING THE DATA

Renaming the Data Files for easy use

```{r}
library(readr)
X1999_Data_from_Child_Maltreatment_Report <- read_csv("~/1999 Data from Child Maltreatment Report.csv")
X2017_Data_from_Child_Maltreatment_Report <- read_csv("~/2017 Data from Child Maltreatment Report.csv")
ninetynine <- X1999_Data_from_Child_Maltreatment_Report
seventeen <- X2017_Data_from_Child_Maltreatment_Report
```

```{r}
regions <- read.csv("https://raw.githubusercontent.com/STAT-JET-ASU/Datasets/master/Instructor/usregions.csv")
```

Adding Region Variables to the 1999 Data Set

```{r}
ninetynine$CensusRegion <- regions$census_region
ninetynine$EconomicRegion <- regions$economic_region
```

Creating a set without Puerto Rico for the Region Variables

```{r}
seventeen_nopr <- seventeen[-c(40),]
```

Adding Region Variables to the 2017 Data Set without Puerto Rico

```{r}
seventeen_nopr$CensusRegion <- regions$census_region
seventeen_nopr$EconomicRegion <- regions$economic_region
```

Add Child Population by State in 1999

```{r}
ninetynine$Population <- c(1066177, 196825, 1334564, 660224, 8923423,
1065510, 828260, 182450, 95290, 3569878, 2056885, 289340, 350464, 3181338,
1528991, 719685, 698637, 965528, 1190001, 290439, 1309432, 1468554, 2561139,
1271850, 752866, 1399492, 223819, 443800, 491476, 304436, 2003204, 495612,
4440924, 1940947, 160092, 2844071, 882062, 827501, 2852520, 241180, 955930,
198037, 1340930, 5719234, 707366, 139346, 1664810, 1486340, 403481, 1348268,
126807)
```

Merging the 1990 and the 2017 without Puerto Rico data sets into one set

```{r}
combined <- cbind(ninetynine, seventeen_nopr)
```

Removing the second "State" column

```{r}
combined[62] <- NULL
```

Removing the first Census Region column

```{r}
```

```
combined[59] <- NULL
```

Removing the first Economic Region column

```{r}
combined[59] <- NULL
```

Renaming the columns in `combined` to reflect the different years

```{r}
names(combined) <- c("State", "Screenedin_ninetynine",
"Screenedout_ninetynine", "disposition_substantiated_ninetynine",
"disposition_indicated_ninetynine", "disposition_unsubstantiated_ninetynine",
"disposition_intentionallyfalse_ninetynine",
"disposition_needservices_ninetynine", "disposition_nofinding_ninetynine",
"disposition_other_ninetynine", "disposition_unknown_ninetynine",
"totalchildvictims_ninetynine", "physicalabuse_ninetynine",
"neglect_ninetynine", "medicalneglect_ninetynine", "sexualabuse_ninetynine",
"psychologicalmaltreatment_ninetynine", "othermaltreatment_ninetynine",
"unknownmaltreatment_ninetynine", "malevictims_ninetynine",
"femalevictims_ninetynine", "ageunderone_ninetynine", "ageone_ninetynine",
"agetwo_ninetynine", "agethree_ninetynine", "agefour_ninetynine",
"agefive_ninetynine", "agesix_ninetynine", "ageseven_ninetynine",
"ageeight_ninetynine", "agenine_ninetynine", "ageten_ninetynine",
"ageeleven_ninetynine", "agetwelve_ninetynine", "agethirteen_ninetynine",
"agefourteen_ninetynine", "agefifteen_ninetynine", "agesixteen_ninetynine",
"ageseventeen_ninetynine", "ageeighteen_ninetynine", "ageunknown_ninetynine",
"africanamerican_ninetynine", "americanindian_alaskanative_ninetynine",
"asian_pacificislander_ninetynine", "white_ninetynine",
"otherrace_ninetynine", "unknownrace_ninetynine",
"hispanicvictims_ninetynine", "nonhispanicvictims_ninetynine",
```

"hispanic_nonhispanic_unknown_ninetynine", "perp_parent_ninetynine",
"perp_otherrelative_ninetynine", "perp_fosterparent_ninetynine",
"perp_resfacilitystaff_ninetynine", "perp_daycare_ninetynine",
"perp_noncaretaker_ninetynine", "perp_relationshipunknown_ninetynine",
"childfatalities_ninetynine", "totchildpop_ninetynine",
"screenedin_seventeen", "screenedout_seventeen", "totreferrals_seventeen",
"receivedinvestigationoraltresponse_seventeen",
"disposition_substantiated_seventeen", "disposition_indicated_seventeen",
"disposition_altresponse_seventeen", "disposition_unsubstantiated_seventeen",
"disposition_intentionallyfalse_seventeen",
"disposition_nofinding_seventeen",
"disposition_noallegedmaltreatment_seventeen", "disposition_other_seventeen",
"disposition_unknown_seventeen", "totalchildvictims_seventeen",
"firsttimevictims_seventeen", "ageunderone_seventeen", "ageone_seventeen",
"agetwo_seventeen", "agethreeseventeen", "agefour_seventeen",
"agefiveseventeen", "agesix_seventeen", "ageseven_seventeen",
"ageeight_seventeen", "agenine_seventeen", "ageten_seventeen",
"ageeleven_seventeen", "agetwelve_seventeen", "agethirteen_seventeen",
"agefourteen_seventeen", "agefifteen_seventeen", "agesixteen_seventeen",
"ageseventeen_seventeen",
"ageunborn_unknownand_betweeneighteenandtwentyone_seventeen",
"boyvictims_seventeen", "girlvictims_seventeen",
"sexunknownvictims_seventeen", "africanamerican_seventeen",
"americanindian_alaskanative_seventeen", "asian_seventeen",
"hispanic_seventeen", "multiplerace_seventeen", "pacificislander_seventeen",
"white_seventeen", "raceunknown_seventeen", "medicalneglect_seventeen",
"neglect_seventeen", "othermaltreatment_seventeen",
"physicalabuse_seventeen", "psychologicalmaltreatment_seventeen",
"sexualabuse_seventeen", "unknownmaltreatment_seventeen",

```
"totchildfatalities_seventeen", "totalperp_seventeen",
"perp_parent_seventeen", "perp_daycare_seventeen",
"perp_fosterparent_seventeen", "perp_friendandneighbor_seventeen",
"perp_legalguardian_seventeen", "perp_other_seventeen",
"perp_otherprofessional_seventeen", "perp_otherrelative_seventeen",
"perp_grouphomeandresfacilitystaff_seventeen",
"perp_unmarriedpartnerofparent_seventeen",
"perp_unknownrelationship_seventeen", "perp_multiplerelationships_seventeen",
"CensusRegion", "EconomicRegion")
```

Add Child Population by State for 2017 to `combined`

```{r}
combined$totchildpop_seventeen <- c(1095235, 185608, 1639058, 705584,
9044860, 1263879, 743234, 203576, 125072, 4201122, 2510274, 305575, 443445,
2895382, 1572675, 732009, 712035, 1011179, 1106369, 252696, 1343582, 1373071,
2181147, 1298811, 714357, 1382519, 229243, 475750, 681303, 260450, 1962020,
488380, 4109166, 2299976, 176374, 2607591, 959232, 873798, 2663231, 206899,
1103430, 216151, 1506198, 7365879, 927441, 116981, 1870958, 1651822, 369122,
1283019, 136247)
```

Add a Column for Screened In Referrals in 1999 Divided by the Child Population in 1999

```{r}
combined <- combined %>%
  mutate(screenedin_bychildpop_ninetynine =
Screenedin_ninetynine/totchildpop_ninetynine)
```

Add a Column for Screened In Referrals in 2017 Divided by the Child Population in 2017

```{r}
combined <- combined %>%
  mutate(screenedin_bychildpop_seventeen =
screenedin_seventeen/totchildpop_seventeen)
```

Adding a Column for Total Referrals in 1999

```{r}
combined <- combined %>%
  mutate(totreferrals_ninetynine = Screenedin_ninetynine +
Screenedout_ninetynine)
```

Adding a Column for Total Referrals in 1999 Divided by Child Population

```{r}
combined <- combined %>%
  mutate(totreferrals_bychildpop_ninetynine =
totreferrals_ninetynine/totchildpop_ninetynine)
```

Adding a Column for Total Referrals in 2017 Divided by Child Population

```{r}
combined <- combined %>%
  mutate(totreferrals_bychildpop_seventeen =
totreferrals_seventeen/totchildpop_seventeen)
```

Adding a Column for Substantiated Claims in 1999 Divided by Screened-in Referrals in 1999

```{r}
combined <- combined %>%
  mutate(substantiated_byscreenedin_ninetynine =
disposition_substantiated_ninetynine/Screenedin_ninetynine)
```

```

Adding a Column for Substantiated Claims in 2017 Divided by Screened-in Referrals in 2017

```{r}
combined <- combined %>%
  mutate(substantiated_byscreenedin_seventeen = disposition_substantiated_seventeen/screenedin_seventeen)
```

Correcting the values for Arizona and Washington for Total Child Victims in 1999

```{r}
combined <- mutate(combined,
totalchildvictims_ninetynine = ifelse(totalchildvictims_ninetynine == 39, 8039, totalchildvictims_ninetynine),
totalchildvictims_ninetynine = ifelse(totalchildvictims_ninetynine == 205, 9205, totalchildvictims_ninetynine))
```

Adding a Column for Total Child Victims Divided by Total Child Population

```{r}
combined <- combined %>%
  mutate(totalchildvictims_bytotchildpop_ninetynine = totalchildvictims_ninetynine/totchildpop_ninetynine,
         totalchildvictims_bytotchildpop_seventeen = totalchildvictims_seventeen/totchildpop_seventeen)
```

Adding a Column for Physical Abuse Victims Divided by Total Child Victims

```{r}
combined <- combined %>%
```
```

```
  mutate(physicalabuse_bytotvictims_ninetynine =
physicalabuse_ninetynine/totalchildvictims_ninetynine,
         physicalabuse_bytotvictims_seventeen =
physicalabuse_seventeen/totalchildvictims_seventeen)
```

Adding a Column for Neglect Victims Divided by Total Child Victims

```{r}
combined <- combined %>%
  mutate(neglect_bytotvictims_ninetynine =
neglect_ninetynine/totalchildvictims_ninetynine,
         neglect_bytotvictims_seventeen =
neglect_seventeen/totalchildvictims_seventeen)
```

Adding a Column for Medical Neglect Victims Divided by Total Child Victims

```{r}
combined <- combined %>%
  mutate(medicalneglect_bytotvictims_ninetynine =
medicalneglect_ninetynine/totalchildvictims_ninetynine,
         medicalneglect_bytotvictims_seventeen =
medicalneglect_seventeen/totalchildvictims_seventeen)
```

Adding a Column for Sexual Abuse Victims Divided by Total Child Victims

```{r}
combined <- combined %>%
  mutate(sexualabuse_bytotvictims_ninetynine =
sexualabuse_ninetynine/totalchildvictims_ninetynine,
         sexualabuse_bytotvictims_seventeen =
sexualabuse_seventeen/totalchildvictims_seventeen)
```

Adding a Column for Psychological Maltreatment Victims Divided by Total Child Victims

```{r}
combined <- combined %>%
  mutate(psychologicalmaltreatment_bytotvictims_ninetynine = psychologicalmaltreatment_ninetynine/totalchildvictims_ninetynine,
         psychologicalmaltreatment_bytotvictims_seventeen = psychologicalmaltreatment_seventeen/totalchildvictims_seventeen)
```

Adding a Column for Male and Female Victims Divided by Total Child Victims

```{r}
combined <- combined %>%
  mutate(male_bytotvictims_ninetynine = malevictims_ninetynine/totalchildvictims_ninetynine,
         male_bytotvictims_seventeen = boyvictims_seventeen/totalchildvictims_seventeen,
         female_bytotvictims_ninetynine = femalevictims_ninetynine/totalchildvictims_ninetynine,
         female_bytotvictims_seventeen = girlvictims_seventeen/totalchildvictims_seventeen)
```

DATA SUMMARIES

1999 Screened In and Screened Out Referrals by Census Region

```{r}
combined %>%
  group_by(CensusRegion) %>%
  summarize(median_referrals = median(totreferrals_ninetynine),
            median_screenedin = median(Screenedin_ninetynine),
            mean_referrals = mean(totreferrals_ninetynine),
```

```
            mean_screenedin = mean(Screenedin_ninetynine))
```

2017 Screened In and Screened Out Referrals by Census Region (without Puerto Rico)

```{r}
combined %>%
  group_by(CensusRegion) %>%
  summarize(median_referrals = median(totreferrals_seventeen, na.rm = T),
            median_screenedin = median(screenedin_seventeen, na.rm = T),
            mean_referrals = mean(totreferrals_seventeen, na.rm = T),
            mean_screenedin = mean(screenedin_seventeen, na.rm = T))
```

1999 Screened In and Screened Out Referrals by Economic Region

```{r}
combined %>%
  group_by(EconomicRegion) %>%
  summarize(median_referrals = median(totreferrals_ninetynine),
            median_screenedin = median(Screenedin_ninetynine),
            mean_referrals = mean(totreferrals_ninetynine),
            mean_screenedin = mean(Screenedin_ninetynine))
```

2017 Screened In and Screened Out Referrals by Economic Region (without Puerto Rico)

```{r}
combined %>%
  group_by(EconomicRegion) %>%
  summarize(median_referrals = median(totreferrals_seventeen, na.rm = T),
            median_screenedin = median(screenedin_seventeen, na.rm = T),
            mean_referrals = mean(totreferrals_seventeen, na.rm = T),
```

```
            mean_screenedin = mean(screenedin_seventeen, na.rm = T))
```

PLOTS

Screened-in Referrals by State

1999

```{r}
ggplot(combined, aes(x = reorder(State, -Screenedin_ninetynine), y =
Screenedin_ninetynine, fill = EconomicRegion)) + geom_bar(stat = "identity",
width = 0.5) + theme(axis.text.x = element_text(angle = 90, hjust = 1))
```

2017

```{r}
ggplot(combined, aes(x = reorder(State, -screenedin_seventeen, fill =
EconomicRegion), y = screenedin_seventeen, fill = EconomicRegion)) +
geom_bar(stat = "identity", width = 0.5) + theme(axis.text.x =
element_text(angle = 90, hjust = 1))
```

Faceted

```{r}
screenedincombined <- gather(combined, key = "measure", value = "value",
c("Screenedin_ninetynine", "screenedin_seventeen"))
names_1 <- c(`Screenedin_ninetynine` = "1999",
             `screenedin_seventeen`  = "2017")
ggplot(screenedincombined, aes(x = State, y = value, fill = EconomicRegion))
+
  geom_bar(stat = "identity", width = 0.5) +
  facet_wrap(~measure, labeller = as_labeller(names_1)) + theme(axis.text.x =
element_text(angle = 90, hjust = 1)) +
  coord_flip()
```

```

Screened-in Referrals by State Divided by Child Population

1999

```{r}
ggplot(combined, aes(x = reorder(State,-screenedin_bychildpop_ninetynine) , y = screenedin_bychildpop_ninetynine, fill = EconomicRegion)) + geom_bar(stat = "identity", width = 0.5) + theme(axis.text.x = element_text(angle = 90, hjust = 1)) + labs(x = "State", y = "Rate", title = "Screened-in Referrals Divided by Child Population, 1999")
```

2017

```{r}
ggplot(combined, aes(x = reorder(State, -screenedin_bychildpop_seventeen), y = screenedin_bychildpop_seventeen, fill = EconomicRegion)) + geom_bar(stat = "identity", width = 0.5) + theme(axis.text.x = element_text(angle = 90, hjust = 1))
```

Faceted

```{r screenedinbychildpop}
screenedinchildpopcombined <- gather(combined, key = "measure", value = "value", c("screenedin_bychildpop_ninetynine", "screenedin_bychildpop_seventeen"))
names_2 <- c(`screenedin_bychildpop_ninetynine` = "1999",
             `screenedin_bychildpop_seventeen`  = "2017")
ggplot(screenedinchildpopcombined, aes(x = State, y = value, fill = EconomicRegion)) +
  geom_bar(stat = "identity", width = 0.5) +
  facet_wrap(~measure, labeller = as_labeller(names_2)) + theme(axis.text.x = element_text(angle = 90, hjust = 1)) +
```
```

```
  coord_flip() +
  labs(title = "Screened-in Referrals as Fraction of Child Population", x =
"State", y = "Rate") +
  scale_fill_grey() + theme_minimal() + theme(legend.position = "bottom")
```

Total Referrals Reported by State

1999

```{r}
ggplot(combined, aes(x = reorder(State, -totreferrals_ninetynine), y =
totreferrals_ninetynine, fill = EconomicRegion)) + geom_bar(stat =
"identity", width = 0.5) + theme(axis.text.x = element_text(angle = 90, hjust
= 1))
```

2017

```{r}
ggplot(combined, aes(x = reorder(State, -totreferrals_seventeen), y =
totreferrals_seventeen, fill = EconomicRegion)) + geom_bar(stat = "identity",
width = 0.5) + theme(axis.text.x = element_text(angle = 90, hjust = 1))
```

Faceted

```{r}
totreferralscombined <- gather(combined, key = "measure", value = "value",
c("totreferrals_ninetynine", "totreferrals_seventeen"))
ggplot(totreferralscombined, aes(x = State, y = value, fill =
EconomicRegion)) +
  geom_bar(stat = "identity", width = 0.5) +
  facet_wrap(~measure) + theme(axis.text.x = element_text(angle = 90, hjust =
1)) +
```

```
  coord_flip()
```

Total Referrals by State Divided by Child Population

1999

```{r}
ggplot(combined, aes(x = reorder(State, -totreferrals_bychildpop_ninetynine),
y = totreferrals_bychildpop_ninetynine, fill = EconomicRegion)) +
geom_bar(stat = "identity", width = 0.5) + theme(axis.text.x =
element_text(angle = 90, hjust = 1))
```

2017

```{r}
ggplot(combined, aes(x = reorder(State, -totreferrals_bychildpop_seventeen),
y = totreferrals_bychildpop_seventeen, fill = EconomicRegion)) +
geom_bar(stat = "identity", width = 0.5) + theme(axis.text.x =
element_text(angle = 90, hjust = 1))
```

Faceted

```{r}
totreferralschildpopcombined <- gather(combined, key = "measure", value =
"value", c("totreferrals_bychildpop_ninetynine",
"totreferrals_bychildpop_seventeen"))
names_3 <- c(`totreferrals_bychildpop_ninetynine` = "1999",
             `totreferrals_bychildpop_seventeen`  = "2017")
ggplot(totreferralschildpopcombined, aes(x = State, y = value, fill =
EconomicRegion)) +
  geom_bar(stat = "identity", width = 0.5) +
```

```
  facet_wrap(~measure, labeller = as_labeller(names_3)) + theme(axis.text.x =
element_text(angle = 90, hjust = 1)) +
  coord_flip() +
  labs(title = "Total Referrals as Fraction of Child Population", x =
"State", y = "Rate") +
  scale_fill_grey() + theme_minimal() + theme(legend.position = "bottom")
```

Substantiated Claims Divided by Screened-in Referrals

1999

```{r}
ggplot(combined, aes(x = reorder(State, -
substantiated_byscreenedin_ninetynine), y =
substantiated_byscreenedin_ninetynine, fill = EconomicRegion)) +
geom_bar(stat = "identity", width = 0.5) + theme(axis.text.x =
element_text(angle = 90, hjust = 1))
```

2017

```{r}
ggplot(combined, aes(x = reorder(State,-
substantiated_byscreenedin_seventeen), y =
substantiated_byscreenedin_seventeen, fill = EconomicRegion)) + geom_bar(stat
= "identity", width = 0.5) + theme(axis.text.x = element_text(angle = 90,
hjust = 1))
```

Faceted

```{r}
substantiatedscreenedincombined <- gather(combined, key = "measure", value =
"value", c("substantiated_byscreenedin_ninetynine",
"substantiated_byscreenedin_seventeen"))
```

```
ggplot(substantiatedscreenedincombined, aes(x = State, y = value, fill =
EconomicRegion)) +
  geom_bar(stat = "identity", width = 0.5) +
  facet_wrap(~measure) + theme(axis.text.x = element_text(angle = 90, hjust =
1)) +
  coord_flip()
```

Total Child Victims Divided by Total Child Population

1999

```{r}
ggplot(combined, aes(x = reorder(State, -
totalchildvictims_bytotchildpop_ninetynine), y =
totalchildvictims_bytotchildpop_ninetynine, fill = EconomicRegion)) +
geom_bar(stat = "identity", width = 0.5) + theme(axis.text.x =
element_text(angle = 90, hjust = 1))
```

2017

```{r}
ggplot(combined, aes(x = reorder(State, -
totalchildvictims_bytotchildpop_seventeen), y =
totalchildvictims_bytotchildpop_seventeen, fill = EconomicRegion)) +
geom_bar(stat = "identity", width = 0.5) + theme(axis.text.x =
element_text(angle = 90, hjust = 1))
```

Faceted

```{r}
totalchildvictimstotchildpopcombined <- gather(combined, key = "measure",
value = "value", c("totalchildvictims_bytotchildpop_ninetynine",
"totalchildvictims_bytotchildpop_seventeen"))
```

```
names_4 <- c(`totalchildvictims_bytotchildpop_ninetynine` = "1999",
             `totalchildvictims_bytotchildpop_seventeen`  = "2017")
ggplot(totalchildvictimstotchildpopcombined, aes(x = State, y = value, fill =
EconomicRegion)) +
  geom_bar(stat = "identity", width = 0.5) +
  facet_wrap(~measure, labeller = as_labeller(names_4)) + theme(axis.text.x =
element_text(angle = 90, hjust = 1)) +
  coord_flip() +
  labs(title = "Total Child Victims as Fraction of Child Population", x =
"State", y = "Rate") +
  scale_fill_grey() + theme_minimal() + theme(legend.position = "bottom")
```

Physical Abuse Victims Divided by Total Child Victims

1999

```{r}
ggplot(combined, aes(x = reorder(State, -
physicalabuse_bytotvictims_ninetynine), y =
physicalabuse_bytotvictims_ninetynine, fill = EconomicRegion)) +
geom_bar(stat = "identity", width = 0.5) + theme(axis.text.x =
element_text(angle = 90, hjust = 1))
```

2017

```{r}
ggplot(combined, aes(x = reorder(State, -
physicalabuse_bytotvictims_seventeen), y =
physicalabuse_bytotvictims_seventeen, fill = EconomicRegion)) + geom_bar(stat
= "identity", width = 0.5) + theme(axis.text.x = element_text(angle = 90,
hjust = 1))
```

Faceted

```{r}
physicalabusetotvictimscombined <- gather(combined, key = "measure", value = "value", c("physicalabuse_bytotvictims_ninetynine", "physicalabuse_bytotvictims_seventeen"))
names_5 <- c(`physicalabuse_bytotvictims_ninetynine` = "1999",
             `physicalabuse_bytotvictims_seventeen`  = "2017")
ggplot(physicalabusetotvictimscombined, aes(x = State, y = value, fill = EconomicRegion)) +
  geom_bar(stat = "identity", width = 0.5) +
  facet_wrap(~measure, labeller = as_labeller(names_5)) + theme(axis.text.x = element_text(angle = 90, hjust = 1)) +
  coord_flip() + labs(title = "Physical Abuse Victims as Fraction of Total Victims", x = "State", y = "Rate") +
  scale_fill_grey() + theme_minimal() + theme(legend.position = "bottom")
```

Neglect Victims Divided by Total Child Population

1999

```{r}
ggplot(combined, aes(x = reorder(State, -neglect_bytotvictims_ninetynine), y = neglect_bytotvictims_ninetynine, fill = EconomicRegion)) + geom_bar(stat = "identity", width = 0.5) + theme(axis.text.x = element_text(angle = 90, hjust = 1))
```

2017

```{r}
ggplot(combined, aes(x = reorder(State, -neglect_bytotvictims_seventeen), y = neglect_bytotvictims_seventeen, fill = EconomicRegion)) + geom_bar(stat =
```

"identity", width = 0.5) + theme(axis.text.x = element_text(angle = 90, hjust = 1))

```

Faceted

```{r}
neglecttotvictimscombined <- gather(combined, key = "measure", value = "value", c("neglect_bytotvictims_ninetynine", "neglect_bytotvictims_seventeen"))
names_6 <- c(`neglect_bytotvictims_ninetynine` = "1999",
             `neglect_bytotvictims_seventeen`  = "2017")
ggplot(neglecttotvictimscombined, aes(x = State, y = value, fill = EconomicRegion)) +
  geom_bar(stat = "identity", width = 0.5) +
  facet_wrap(~measure, labeller = as_labeller(names_6)) + theme(axis.text.x = element_text(angle = 90, hjust = 1)) +
  coord_flip() + labs(title = "Neglect Victims as Fraction of Total Victims", x = "State", y = "Rate") +
  scale_fill_grey() + theme_minimal() + theme(legend.position = "bottom")
```

Medical Neglect Victims Divided by Total Child Population

1999

```{r}
ggplot(combined, aes(x = reorder(State, -medicalneglect_bytotvictims_ninetynine), y = medicalneglect_bytotvictims_ninetynine, fill = EconomicRegion)) +
geom_bar(stat = "identity", width = 0.5) + theme(axis.text.x = element_text(angle = 90, hjust = 1))
```

2017
```

```{r}
ggplot(combined, aes(x = reorder(State, -
medicalneglect_bytotvictims_seventeen), y =
medicalneglect_bytotvictims_seventeen, fill = EconomicRegion)) +
geom_bar(stat = "identity", width = 0.5) + theme(axis.text.x =
element_text(angle = 90, hjust = 1))
```

Faceted

```{r}
mednegle cttotvictimscombined <- gather(combined, key = "measure", value =
"value", c("medicalneglect_bytotvictims_ninetynine",
"medicalneglect_bytotvictims_seventeen"))
names_7 <- c(`medicalneglect_bytotvictims_ninetynine` = "1999",
             `medicalneglect_bytotvictims_seventeen`  = "2017")
ggplot(mednegle cttotvictimscombined, aes(x = State, y = value, fill =
EconomicRegion)) +
  geom_bar(stat = "identity", width = 0.5) +
  facet_wrap(~measure, labeller = as_labeller(names_7)) + theme(axis.text.x =
element_text(angle = 90, hjust = 1)) +
  coord_flip() + labs(title = "Medical Neglect Victims as Fraction of Total
Victims", x = "State", y = "Rate") +
  scale_fill_grey() + theme_minimal() + theme(legend.position = "bottom")
```

Sexual Abuse Victims Divided by Total Child Population

1999

```{r}
ggplot(combined, aes(x = reorder(State, -
sexualabuse_bytotvictims_ninetynine), y =
sexualabuse_bytotvictims_ninetynine, fill = EconomicRegion)) + geom_bar(stat
```

```
= "identity", width = 0.5) + theme(axis.text.x = element_text(angle = 90,
hjust = 1))
```

2017

```{r}
ggplot(combined, aes(x = reorder(State, -sexualabuse_bytotvictims_seventeen),
y = sexualabuse_bytotvictims_seventeen, fill = EconomicRegion)) +
geom_bar(stat = "identity", width = 0.5) + theme(axis.text.x =
element_text(angle = 90, hjust = 1))
```

Faceted

```{r}
sexabusetotvictimscombined <- gather(combined, key = "measure", value =
"value", c("sexualabuse_bytotvictims_ninetynine",
"sexualabuse_bytotvictims_seventeen"))
names_8 <- c(`sexualabuse_bytotvictims_ninetynine` = "1999",
             `sexualabuse_bytotvictims_seventeen`  = "2017")
ggplot(sexabusetotvictimscombined, aes(x = State, y = value, fill =
EconomicRegion)) +
  geom_bar(stat = "identity", width = 0.5) +
  facet_wrap(~measure, labeller = as_labeller(names_8)) + theme(axis.text.x =
element_text(angle = 90, hjust = 1)) +
  coord_flip() + labs(title = "Sexual Abuse Victims as Fraction of Total
Victims", x = "State", y = "Rate") +
  scale_fill_grey() + theme_minimal() + theme(legend.position = "bottom")
```

Psychological Maltreatment Victims Divided by Total Child Population

1999

```{r}
```

```
ggplot(combined, aes(x = reorder(State, -
psychologicalmaltreatment_bytotvictims_ninetynine), y =
psychologicalmaltreatment_bytotvictims_ninetynine, fill = EconomicRegion)) +
geom_bar(stat = "identity", width = 0.5) + theme(axis.text.x =
element_text(angle = 90, hjust = 1))
```

2017

```{r}
ggplot(combined, aes(x = reorder(State, -
psychologicalmaltreatment_bytotvictims_seventeen), y =
psychologicalmaltreatment_bytotvictims_seventeen, fill = EconomicRegion)) +
geom_bar(stat = "identity", width = 0.5) + theme(axis.text.x =
element_text(angle = 90, hjust = 1))
```

Faceted

```{r}
psychmaltotvictimscombined <- gather(combined, key = "measure", value =
"value", c("psychologicalmaltreatment_bytotvictims_ninetynine",
"psychologicalmaltreatment_bytotvictims_seventeen"))
names_9 <- c(`psychologicalmaltreatment_bytotvictims_ninetynine` = "1999",
             `psychologicalmaltreatment_bytotvictims_seventeen`  = "2017")
ggplot(psychmaltotvictimscombined, aes(x = State, y = value, fill =
EconomicRegion)) +
  geom_bar(stat = "identity", width = 0.5) +
  facet_wrap(~measure, labeller = as_labeller(names_9)) + theme(axis.text.x =
element_text(angle = 90, hjust = 1)) +
  coord_flip() + labs(title = "Psychological Maltreatment Victims as Fraction
of Total Victims", x = "State", y = "Rate") + scale_fill_grey() +
theme_minimal() + theme(legend.position = "bottom")
```

```

Male Victims Divided by Total Victims Faceted

```{r}
maletotvictimscombined <- gather(combined, key = "measure", value = "value",
c("male_bytotvictims_ninetynine", "male_bytotvictims_seventeen"))
names_10 <- c(`male_bytotvictims_ninetynine` = "1999",
              `male_bytotvictims_seventeen`  = "2017")
ggplot(maletotvictimscombined, aes(x = State, y = value, fill =
EconomicRegion)) +
  geom_bar(stat = "identity", width = 0.5) +
  facet_wrap(~measure, labeller = as_labeller(names_10)) + theme(axis.text.x
= element_text(angle = 90, hjust = 1)) +
  coord_flip() + labs(title = "Male Victims as Fraction of Total Victims", x
= "State", y = "Rate") + scale_fill_grey() + theme_minimal() +
theme(legend.position = "bottom")
```

Female Victims Divided by Total Victims Faceted

```{r}
femaletotvictimscombined <- gather(combined, key = "measure", value =
"value", c("female_bytotvictims_ninetynine",
"female_bytotvictims_seventeen"))
names_11 <- c(`female_bytotvictims_ninetynine` = "1999",
              `female_bytotvictims_seventeen`  = "2017")
ggplot(femaletotvictimscombined, aes(x = State, y = value, fill =
EconomicRegion)) +
  geom_bar(stat = "identity", width = 0.5) +
  facet_wrap(~measure, labeller = as_labeller(names_11)) + theme(axis.text.x
= element_text(angle = 90, hjust = 1)) +
```
```

```
  coord_flip() + labs(title = "Female Victims as Fraction of Total Victims",
x = "State", y = "Rate") + scale_fill_grey() + theme_minimal() +
theme(legend.position = "bottom")
```

Ages Plots Nationally

```{r}
ageunderone_ninetynine <- sum(combined$ageunderone_ninetynine, na.rm=T)
ageone_ninetynine <- sum(combined$ageone_ninetynine, na.rm=T)
agetwo_ninetynine <- sum(combined$agetwo_ninetynine, na.rm=T)
agethree_ninetynine <- sum(combined$agethree_ninetynine, na.rm=T)
agefour_ninetynine <- sum(combined$agefour_ninetynine, na.rm=T)
agefive_ninetynine <- sum(combined$agefive_ninetynine, na.rm=T)
agesix_ninetynine <- sum(combined$agesix_ninetynine, na.rm=T)
ageseven_ninetynine <- sum(combined$ageseven_ninetynine, na.rm=T)
ageeight_ninetynine <- sum(combined$ageeight_ninetynine, na.rm=T)
agenine_ninetynine <- sum(combined$agenine_ninetynine, na.rm=T)
ageten_ninetynine <- sum(combined$ageten_ninetynine, na.rm=T)
ageeleven_ninetynine <- sum(combined$ageeleven_ninetynine, na.rm=T)
agetwelve_ninetynine <- sum(combined$agetwelve_ninetynine, na.rm=T)
agethirteen_ninetynine <- sum(combined$agethirteen_ninetynine, na.rm=T)
agefourteen_ninetynine <- sum(combined$agefourteen_ninetynine, na.rm=T)
agefifteen_ninetynine <- sum(combined$agefifteen_ninetynine, na.rm=T)
agesixteen_ninetynine <- sum(combined$agesixteen_ninetynine, na.rm=T)
ageseventeen_ninetynine <- sum(combined$ageseventeen_ninetynine, na.rm=T)
ageunderone_seventeen <- sum(combined$ageunderone_seventeen, na.rm=T)
ageone_seventeen <- sum(combined$ageone_seventeen, na.rm=T)
agetwo_seventeen <- sum(combined$agetwo_seventeen, na.rm=T)
agethree_seventeen <- sum(combined$agethreeseventeen, na.rm=T)
agefour_seventeen <- sum(combined$agefour_seventeen, na.rm=T)
```

```
agefive_seventeen <- sum(combined$agefiveseventeen, na.rm=T)
agesix_seventeen <- sum(combined$agesix_seventeen, na.rm=T)
ageseven_seventeen <- sum(combined$ageseven_seventeen, na.rm=T)
ageeight_seventeen <- sum(combined$ageeight_seventeen, na.rm=T)
agenine_seventeen <- sum(combined$agenine_seventeen, na.rm=T)
ageten_seventeen <- sum(combined$ageten_seventeen, na.rm=T)
ageeleven_seventeen <- sum(combined$ageeleven_seventeen, na.rm=T)
agetwelve_seventeen <- sum(combined$agetwelve_seventeen, na.rm=T)
agethirteen_seventeen <- sum(combined$agethirteen_seventeen, na.rm=T)
agefourteen_seventeen <- sum(combined$agefourteen_seventeen, na.rm=T)
agefifteen_seventeen <- sum(combined$agefifteen_seventeen, na.rm=T)
agesixteen_seventeen <- sum(combined$agesixteen_seventeen, na.rm=T)
ageseventeen_seventeen <- sum(combined$ageseventeen_seventeen, na.rm=T)
totalchildvictimsninetynine <- sum(combined$totalchildvictims_ninetynine)
totalchildvictimsseventeen <- sum(combined$totalchildvictims_seventeen)
ninetynineages <- c(ageunderone_ninetynine/totalchildvictimsninetynine,
ageone_ninetynine/totalchildvictimsninetynine,
agetwo_ninetynine/totalchildvictimsninetynine,agethree_ninetynine/totalchildv
ictimsninetynine, agefour_ninetynine/totalchildvictimsninetynine,
agefive_ninetynine/totalchildvictimsninetynine,
agesix_ninetynine/totalchildvictimsninetynine,
ageseven_ninetynine/totalchildvictimsninetynine,
ageeight_ninetynine/totalchildvictimsninetynine,
agenine_ninetynine/totalchildvictimsninetynine,
ageten_ninetynine/totalchildvictimsninetynine,
ageeleven_ninetynine/totalchildvictimsninetynine,
agetwelve_ninetynine/totalchildvictimsninetynine,
agethirteen_ninetynine/totalchildvictimsninetynine,
agefourteen_ninetynine/totalchildvictimsninetynine,
```

```
agefifteen_ninetynine/totalchildvictimsninetynine,
agesixteen_ninetynine/totalchildvictimsninetynine,
ageseventeen_ninetynine/totalchildvictimsninetynine)
seventeenages <- c(ageunderone_seventeen/totalchildvictimsseventeen,
ageone_seventeen/totalchildvictimsseventeen,
agetwo_seventeen/totalchildvictimsseventeen,
agethree_seventeen/totalchildvictimsseventeen,
agefour_seventeen/totalchildvictimsseventeen,
agefive_seventeen/totalchildvictimsseventeen,
agesix_seventeen/totalchildvictimsseventeen,
ageseven_seventeen/totalchildvictimsseventeen,
ageeight_seventeen/totalchildvictimsseventeen,
agenine_seventeen/totalchildvictimsseventeen,
ageten_seventeen/totalchildvictimsseventeen,
ageeleven_seventeen/totalchildvictimsseventeen,
agetwelve_seventeen/totalchildvictimsseventeen,
agethirteen_seventeen/totalchildvictimsseventeen,
agefourteen_seventeen/totalchildvictimsseventeen,
agefifteen_seventeen/totalchildvictimsseventeen,
agesixteen_seventeen/totalchildvictimsseventeen,
ageseventeen_seventeen/totalchildvictimsseventeen)
age <- c("underone", "one", "two", "three", "four", "five", "six", "seven",
"eight", "nine", "ten", "eleven", "twelve", "thirteen", "fourteen",
"fifteen", "sixteen", "seventeen")
agetable <- data.frame(age, ninetynineages, seventeenages)
agetable$age <- factor(agetable$age, levels = c("underone", "one", "two",
"three", "four", "five", "six", "seven", "eight", "nine", "ten", "eleven",
"twelve", "thirteen", "fourteen", "fifteen", "sixteen", "seventeen"))
names_12 <- c(`ninetynineages` = "1999",
```

```
              `seventeenages`  = "2017")
ages <- gather(agetable, key = "measure", value = "value",
c("ninetynineages", "seventeenages"))
ggplot(ages, aes(x = age, y = value)) +
  geom_bar(stat = "identity", width = 0.5) +
  facet_wrap(~measure, labeller = as_labeller(names_12)) + theme(axis.text.x
= element_text(angle = 90, hjust = 1)) +
  coord_flip() + labs(title = "Sum of Child Victims by Age Groups Divided by
Total Child Victims", subtitle = "Nationally", x = "Age", y = "Rate") +
scale_fill_grey() + theme_minimal() + theme(legend.position = "bottom")
```

CALCULATIONS

Percent Change in Screened-in Referrals by Child Population from 1999 to 2017

```{r}
combined <- combined %>%
  mutate(percentchange_screenedin_bychildpop =
screenedin_bychildpop_seventeen/screenedin_bychildpop_ninetynine - 1)
```

Mean and Median of Percent Change in Screened-in Referrals by Child Population from 1999 to 2017

```{r}
mean_percentchange_screenedin_bychildpop <-
mean(combined$percentchange_screenedin_bychildpop)
mean_percentchange_screenedin_bychildpop
med_percentchange_screenedin_bychildpop <-
median(combined$percentchange_screenedin_bychildpop)
med_percentchange_screenedin_bychildpop
```

```

Mean and Median of Percent Increase of Screened-in Referrals by Child Population from 1999 to 2017

```{r}
increase <- ifelse(combined$percentchange_screenedin_bychildpop >= 0, combined$percentchange_screenedin_bychildpop, NA)
increase
meanincrease_screenedin_bychildpop <- mean(increase, na.rm = T)
meanincrease_screenedin_bychildpop
medincrease_screenedin_bychildpop <- median(increase, na.rm = T)
medincrease_screenedin_bychildpop
```

Percent Change in Total Referrals by Child Population from 1999 to 2017

```{r}
combined <- combined %>%
  mutate(percentchange_totreferrals_bychildpop = totreferrals_bychildpop_seventeen/totreferrals_bychildpop_ninetynine - 1)
```

Mean and Median of Percent Change in Screened-in Referrals by Child Population from 1999 to 2017

```{r}
mean_percentchange_totreferrals_bychildpop <- mean(combined$percentchange_totreferrals_bychildpop)
mean_percentchange_totreferrals_bychildpop
med_percentchange_totreferrals_bychildpop <- median(combined$percentchange_totreferrals_bychildpop)
med_percentchange_totreferrals_bychildpop
```
```

Mean and Median of Percent Increase of Total Referrals by Child Population from 1999 to 2017

```{r}
increase_tr <- ifelse(combined$percentchange_totreferrals_bychildpop >= 0, combined$percentchange_totreferrals_bychildpop, NA)
increase_tr
meanincrease_totreferrals_bychildpop <- mean(increase_tr, na.rm = T)
meanincrease_totreferrals_bychildpop
medincrease_totreferrals_bychildpop <- median(increase_tr, na.rm = T)
medincrease_totreferrals_bychildpop
```

Percent Change in Total Child Victims by Child Population from 1999 to 2017

```{r}
combined <- combined %>%
  mutate(percentchange_totvictims_bychildpop = totalchildvictims_bytotchildpop_seventeen/totalchildvictims_bytotchildpop_ninetynine - 1)
```

Mean and Median of Percent Change in Total Child Victims by Child Population from 1999 to 2017

```{r}
mean_percentchange_totvictims_bychildpop <- mean(combined$percentchange_totvictims_bychildpop)
mean_percentchange_totvictims_bychildpop
med_percentchange_totvictims_bychildpop <- median(combined$percentchange_totvictims_bychildpop)
med_percentchange_totvictims_bychildpop
```

Mean and Median of Percent Increase of Total Child Victims by Child Population from 1999 to 2017

```{r}
increase_tv <- ifelse(combined$percentchange_totvictims_bychildpop >= 0, combined$percentchange_totvictims_bychildpop, NA)
increase_tv
meanincrease_totvictims <- mean(increase_tv, na.rm = T)
meanincrease_totvictims
medincrease_totvictims <- median(increase_tv, na.rm = T)
medincrease_totvictims
```

Mean and Median of Percent Decrease of Total Child Victims by Child Population from 1999 to 2017

```{r}
decrease_tv <- ifelse(combined$percentchange_totvictims_bychildpop <= 0, combined$percentchange_totvictims_bychildpop, NA)
decrease_tv
meandecrease_totvictims <- mean(decrease_tv, na.rm = T)
meandecrease_totvictims
meddecrease_totvictims <- median(decrease_tv, na.rm = T)
meddecrease_totvictims
```

Mean and Median of Victim Sex Divided by Total Victims

```{r}
mean_maleninetynine <- mean(combined$male_bytotvictims_ninetynine, na.rm=T)
mean_maleninetynine
med_maleninetynine <- median(combined$male_bytotvictims_ninetynine, na.rm=T)
med_maleninetynine
mean_maleseventeen <- mean(combined$male_bytotvictims_seventeen, na.rm=T)
```

```
mean_maleseventeen

med_maleseventeen <- median(combined$male_bytotvictims_seventeen, na.rm=T)

med_maleseventeen

mean_femaleninetynine <- mean(combined$female_bytotvictims_ninetynine,

na.rm=T)

mean_femaleninetynine

med_femaleninetynine <- median(combined$female_bytotvictims_ninetynine,

na.rm=T)

med_femaleninetynine

mean_femaleseventeen <- mean(combined$female_bytotvictims_seventeen, na.rm=T)

mean_femaleseventeen

med_femaleseventeen <- median(combined$female_bytotvictims_seventeen,

na.rm=T)

med_femaleseventeen
```